THE LIGHT CURVES OF THE ECLIPSING VARIABLES T T LYRAE AND Y CAMELOPARDALIS.

A determination of the light curves of the eclipsing variable stars, T T Lyrae and Y Camelopardalis, has been undertaken as a part of the work of the writer as Fellow of the Nantucket Maria Mitchell Association. Two distinctive characteristics of these stars, which recommended their selection for study are: 1. The long range in variation of the light of T T Lyrae, which was brought to the attention of the writer by visual observations at Nantucket in 1912. 2. The slowly decreasing period of Y Camelopardalis, which Professors Blazko and Nijland reported in A. N. 177, 119; 183, 283. The brightness of these two stars has been measured on photographs belonging to the Harvard College Observatory.

The plates containing T T Lyrae were taken between the years 1890 and 1913. The magnitudes of the comparison stars for this variable were obtained in the following manner on the scale of the visual photometric magnitudes, corrected for spectrum. Measures of the visual photometric magnitudes were not attainable for the stars closely adjoining the variable, which had been selected as comparison stars. Consequently, a series of twenty-two auxiliary comparison stars was chosen, for fourteen of which, visual photometric

magnitudes could be found in H. A. 54 and 70. These stars were all within three degrees of the variable. The brightness of the auxiliary comparison stars, as well as of the comparison stars themselves, was measured on four plates taken with the 8-inch Draper Telescope, and on four plates taken with the 1-inch Cooke lens, by the method described in H. A. 26, 260. The prismatic companions which accompany the images of the bright stars on the Draper plates, and which are described in H. A. 26, pp. XIV and 204, were measured also. The scale used for both series of plates was cut from Plate I 32811, taken with the 8-inch Draper Telescope, March 3, 1905. There are seven exposures of 1, 3, 9, 27, 81, 243, and 729 seconds, respectively. The bright stars were compared with the images of B. D. + 22°563, and the faint stars with those of B. D. +23°524. Many stars were compared with both sets of images, and the mean of the two readings taken. The spectrum corrections, given in H. A. 59, No. 5, were applied to the photometric magnitudes of the comparison stars. By means of curves, the scale intervals of the prismatic companions and of the star images measured on both series of plates were reduced to the corrected photometric scale for, first, the anxiliary comparison stars, and then for the comparison stars themselves. The means of the magnitudes, resulting for each star image on the two series of plates, and for the corresponding prismatic companions on the Draper plates, was adopted as the magnitude for each comparison star.

The photographs of Y Camelopardalis were taken between the years 1890 and 1915. All of the Harvard plates covering the region were measured, with the exception of a few upon which the images were defective. Standard magnitudes of the comparison stars were obtained on the scale of the North Polar Sequence, described in H. A. 71, No. 3. The plates, upon which the magnitudes were measured, were taken in series with the 16-inch Metcalf Doublet at the Harvard Observatory.

Table I gives a list of the comparison stars used for the two variables. The first and fifteenth lines give the position and magnitude at maximum of Y Camelopardalis and T T Lyrae, respectively. The lines immediately following each variable contain the positions of the comparison stars for that variable. The first two columns contain a letter for reference and the number in the Bonn Durchmusterung. The third and fourth columns give the right ascension and declination for 1900. The positions of the stars, not contained in any catalogue, were measured from the Durchmusterung positions of the others. The fifth column gives the adopted photographic magnitude of each comparison star. The residuals for the plates measured, expressed in hundredths of a magnitude, are given in the sixth column. For the comparison stars of Y Camelopardalis, the first two residuals belong to the star images, the second two, to the prismatic companions. Taken in order, the residuals for the comparison stars of T T Lyrae belong to the magnitudes derived from the A C plates taken with the

Cooke lens, from the Draper plates, from the prismatic companions, and from remeasures of the A C plates which were made in order to insert comparison stars c, d, and e. The residuals for stars c, d, and e are from the scale measures of the four A C plates only, and are expressed in tenths of a magnitude. The seventh column contains the spectrum as classified by Miss Cannon. Owing to the faintness of Y Camelopardalis, its spectrum can be designated only as falling between A and F. The magnitudes of the variables were estimated directly by comparison with the magnitudes of the comparison stars. The majority of the plates showing the variables at maximum brightness were measured only once. But at least two independent estimates were made when the images were fainter than normal brightness.

The observations of T T Lyrae are given in Table II. The time of the middle of the exposure expressed in Julian Days and decimals following Greenwich Mean Noon, is followed by a letter indicating the instrument used, and a number, which is the correction for the equation of light to be added to the Julian Day and decimal. This is expressed in thousandths of a day, negative values being indicated by Italics. The letters e and f indicate the 1-inch Cooke lenses in Cambridge and Arequipa, respectively, i, the 8-inch Draper Telescope, ~~and~~ m, the 16-inch Metcalf telescope, and E, a 4-inch Zeiss lens. The mean observed magnitude of the variable and the residuals

from the original estimates, expressed in tenths of a magnitude, are contained in the second and third columns. The letter A in the residual column, indicates that only one estimate was made. The fourth and fifth columns give the number of the period following the first minimum after J. D. 2,410,000, and the phase computed by the formula J. D. 2,410,000.757 + $5^d.243708$ E, and corrected for the equation of light. Wherever the images of the variable came near the edge of the plate, or were in anyway blurred or so faint that the measurements were rendered doubtful, the observations have been given half weight. The number in the last column designates the weight.

The observations of T T Lyrae were at first plotted, using the period $5^d.2437$ which Profesor Enebo announced in A. N. 188, 150. By plotting the residuals in time, the period was corrected to $5^d.243708$. No trace of a secondary minimum was found. The mean light curve was plotted from the weighted means of the observations for each $0^d.1$ of phase during normal brightness, and for each 0.05 of phase near minimum. These means are given in Table III, where the successive columns contain a designation number, the number of observations represented in the means, the mean phases, the corresponding mean magnitudes, and the residuals from the mean curve, expressed in hundredths of a magnitude. The average deviation is ± 0.045 magnitudes. A reproduction of the part of the curve which includes the minimum is given in

Figure 1.

As mentioned above, the period of Y Camelopardalis was found to be variable by Professors Nijland and Blazko. After combining his observations with those of Professor Blazko, Professor Nijland announced the period: J. D. 2416306.388 + $+3^d.305594 - 0^d.000000104\ E^2$. Omitting the term of the second order, the period $3^d.305594$ was at first tried for the observations on the Harvard plates which extend over twenty-three years. A straight line through the plotting of the residuals in time seemed to indicate a change in the period to $3^d.305568$. The residuals from the light curve, plotted with this period, no longer fell along a straight line, but on a curve. This verifies the variable nature of the period which has been steadily decreasing during the time covered by the observations.

The observations of Y Camelopardalis are given in Table IV. The first, second, third and fourth columns correspond, respectively, to the first four columns of Table II. The fifth column gives the residual in time, expressed in thousandths of a day, of the phases from the light curve which was drawn through the individual observations with the period $3^d.305568$. A plotting with these residuals as ordinates and the Julian Day, given in the first column, as abscissas is reproduced in Figure 2. The curve drawn through them shows the variation from the period. The readings from this curve are given in the sixth column. The seventh column contains the phase found

by applying the correction indicated in the sixth column to the phases of the uncorrected light curve, which were computed by the formula J. D. 2,410,002.642 + $3^d.305568$ E and corrected for the equation of light. The eighth column gives a number expressing the weight to be given to the observation, as is explained for the last column of Table II.

The mean light curve of Y Camelopardalis was plotted from the weighted means of the observations for each $0^d.1$ of phase during maximum brightness, and for each $0^d.04$ of phase near minimum. These are given in Table V, where the successive columns contain a designative number, the number of observations represented in the means, the mean phases, the corresponding mean magnitudes, and the residuals from the mean curve, expressed in hundredths of a magnitude. The average deviation is 0.030 magnitudes. A reproduction of the mean curve for the entire period is given in Figure 3. Although there is no decided evidence of a secondary minimum, the negative residuals near the middle of the maximum may indicate an eclipse not deeper than one tenth of a magnitude.

Visual photometric observations of Y Camelopardalis, which were made by Professor O. C. Wendell with the Fifteen-Inch East Equatorial Telescope between the years 1904 and 1902, are published in H. A. 69, 151. It was found that with the period $3^d.305568$ these observations fall along a curve much more closely than they do with the period $3^d.305594$ with which the

phases in Volume 69 were computed. Consequently these observations are partly republished in Table VI. The first column contains a designation number, the observations being given in the same order that they are printed in H. A. 69, 151. The second column gives the number of the period following J. D. 2416306.388. In the third column are the phases computed with the period $3^{d}.305568$. The fourth and fifth columns, respectively, contain the magnitudes and the residuals in time, expressed in thousandths of a day, of the phases from the light curve which was drawn through the individual observations. A reproduction of the light curve is given in Figure 4. Figure 5 represents a plotting of the residuals from column 4 of Table VI as ordinates and of the corresponding Julian Days as abscissas. The curve drawn through these points shows the correction to the period derived from these visual measures.

TABLE I

Comparison Stars

Des.	B.D.M.	R.A. 1900	Dec. 1900	Magn.	Resid.	Sp.
.	286	7^h $27^m.6$	+76° 17'	10.38	. . . .	.
a	292	31.4	18	9.05	11 22 17 07	K5
c	290	30.2	12	9.48	10 11 18 18	G5
c'	285	26.6	31	9.98	04 04 . .	F5
d	.	29.1	18	10.17	01 05 03 .	F
e	283	24.1	3	10.48	10 10 . .	.
f	.	31.1	14	11.00	06 06 . .	.
g	.	26.6	18	11.32	05 06 . .	.
h	.	27.1	46	11.71	12 12 . .	.
h'	.	24.0	43	12.03	18 18 . .	.
h"	.	24.1	22	12.38	11 10 . .	.
k	.	27.0	24	12.57	09 09 . .	.
l	.	27.1	25	12.88	05 05 . .	.
m	.	28.0	4	12.72	04 04 . .	.
.	3353	19 24.3	+41 30	8.54	. . .	A
a	3354	19 24.4	26	7.77	07 07 08 07	A
b	3350	19 23.7	16	8.13	01 08 04 03	Fo
c	3346	23.1	39	8.59	1 0 0 1	G5
d	3721	22.7	3	9.10	3 2 1 1	Ao
e	3330	19.8	15	9.20	1 2 1 1	G5
f	3359	24.7	24	9.67	09 02 . 06	G5

TABLE I

Comparison Stars

Des.	B.D.R.	J.A. 1900	Des. 1900	Magn.	Resid.	Sp.
.	2860	γ_M 27.6	+28° 17'	10.28	. . . .	.
a	2852	21.4	18	9.08	11 28 17 07	K8
c	2820	20.2	12	9.46	10 11 18 18	G8
c'	2808	20.6	21	9.88	04 04 . .	F8
d	.	20.1	18	10.17	01 08 08 .	F
e	2803	24.1	3	10.48	10 10 . .	.
f	.	21.1	14	11.00	08 06 . .	.
g	.	26.6	18	11.20	08 06 . .	.
h	.	27.1	46	11.71	12 12 . .	.
h'	.	24.0	43	12.08	10 18 . .	.
h"	.	24.1	22	12.36	11 10 . .	.
k	.	27.0	24	12.57	09 09 . .	.
l	.	27.1	25	12.68	08 08 . .	.
m	.	25.0	4	12.76	04 04 . .	.
.	2805	12 24.8	+41 30	6.84	. . .	A
a	2824	13 24.4	26	7.77	07 04 08 07	A
b	2800	12 23.7	16	8.12	01 08 04 05	A0
c	2846	23.1	29	8.89	1 0 0 1	G8
d	2821	22.7	3	9.10	3 2 1 1	A0
e	2830	19.8	18	9.80	1 2 1 1	G8
f	2829	24.7	24	9.87	09 06 . 06	G8

Des.	B.D.M.	R.A. 1900	Dec. 1900	Magn.	Resid.	Sp.
g	3355	$19^h\ 24^m.5$	$+41^\circ\ 29'$	9.69	09 02 . 06	F5
h	3351	24.1	31	9.94	15 14 . .	G5
k	3362	35.5	23	10.49	13 13 . .	G
l	3365	26.2	26	11.08	11 11 . .	K
m	3357	24.6	34	11.57	07 07 . .	.
n	.	25.1	26	11.62	08 07 . .	.
o	.	23.0	24	11.80	04 05 . .	.
p	.	25.3	32	11.98	05 06 . .	.
q	3348	23.6	39	12.38	04 03 . .	.
r	.	23.5	26	12.70	04 04 . .	.
s	.	24.8	31	13.10	03 04 . .	.
t	.	24.6	33	13.38	05 04 . .	.

Dec.	B.D.M.	R.A. 1900	Dec. 1900	Magn.	Hosid.	Sp.
S	3885	19h 24m5	+41° 29'	9.89	09 02 . 06	P6
h	3881	24.1	31	9.94	16 14 . .	68
k	3868	36.8	23	10.49	15 19 . .	6
l	3865	68.8	20	11.08	11 11 . .	K
m	3857	24.6	04	11.87	04 07 . .	.
n	.	26.1	06	11.62	08 07 . .	.
o	.	28.0	24	11.80	04 08 . .	.
p	.	28.3	38	11.98	06 06 . .	.
q	3848	23.6	39	12.38	04 09 . .	.
r	.	23.8	26	13.70	04 04 . .	.
s	.	24.8	31	13.10	03 04 . .	.
t	.	24.6	38	13.38	06 04 . .	.

TABLE II

Observations of T T Lyrae

J. D.	Magn.	Resid.	E	Phase	Wt.
1465.861 i1	8.7	A . . .	279	2.108	2
1521.710 i2	8.7	A . . .	289	5.523	2
1610.584 i2	12.00	1 1 . .	306	5.254	2
1610.662 i2	10.78	0 0 0 i	306	5.332	2
1692.454 i1	8.4	A . . .	322	3.222	2
1706.457 i2	8.4	A . . .	325	1.493	2
1706.466 i2	8.8	A . . .	325	1.502	2
1907.752 i2	8.7	A . . .	363	3.531	2
1958.618 i3	8.58	1 2 1 1	373	1.961	2
1969.634 i2	8.45	1 0 . .	375	2.488	2
1980.585 i2	8.4	A . . .	377	2.952	2
1986.570 i2	8.4	A . . .	378	3.693	2
1994.590 i2	8.4	A . . .	380	1.226	2
2064.435 i1	8.35	1 0 . .	393	2.900	2
2656.771 i3	8.3	A . . .	506	2.700	2
2664.739 i3	9.18	1 0 0 0	507	5.425	2
2668.692 i3	8.3	A . . .	508	4.134	2
2678.683 i3	8.7	A . . .	510	3.638	2
2698.615 i2	8.4	A . . .	514	2.594	2
2701.568 i2	8.7	A . . .	514	5.547	2
2727.556 i2	11.00	3 0 1 0 1 1	519	5.316	2
3062.662 i3	8.4	A . . .	583	4.826	2

J. D.	Magn.	Resid.	E	Phase	Wt.
3083.566 i2	8.6	A . . .	587	4.754	2
3405.738 i3	8.40	0 0 . .	649	1.817	2
3713.756 i2	8.8	A . . .	707	5.699	2
3841.569 i1	8.4	A . . .	732	2.418	2
3843.557 i1	8.80	0 0 . .	732	4.406	2
3864.502 i0	8.7	A . . .	736	4.376	2
4150.756 i3	8.3	A . . .	791	2.228	2
4193.606 i2	8.4	A . . .	799	3.128	2
4477.775 i3	8.5	A . . .	853	4.138	2
4529.687 i2	8.4	A . . .	863	3.612	2
4755.853 e1	8.7	A . . .	906	4.295	2
4772.793 i0	8.95	1 0 . .	909	5.505	2
4773.816 e0	8.4	A . . .	910	1.284	2
4778.776 i0	8.4	A . . .	911	1.001	2
4812.762 e2	8.7	A . . .	917	3.526	2
4849.721 e3	8.7	A . . .	924	3.780	2
4850.649 e3	8.7	A . . .	924	4.708	2
4850.664 e3	8.8	A . . .	924	4.723	2
4850.685 e3	8.8	A . . .	924	4.744	2
4850.706 e3	8.8	A . . .	924	4.765	2
4850.727 e3	8.7	A . . .	924	4.786	1
4850.748 e3	8.8	A . . .	924	4.807	2
4850.768 e3	8.8	A . . .	924	4.827	2
4850.789 e3	8.8	A . . .	924	4.848	2
4850.910 e3	8.8	A . . .	924	4.969	2

J. D.	Magn.	Resid.	E	Phase	Wt.
4850.931 e3	8.8	A . . .	924	4.990	2
4855.575 i3	8.7	A . . .	925	4.391	2
4855.748 i3	8.8	A . . .	925	4.564	2
4855.777 i3	8.6	A . . .	925	4.593	2
4855.846 i3	8.5	A . . .	925	4.662	2
4856.596 i3	9.70	0 0 0 .	925	5.412	2
4857.708 i3	8.87	1 1 1 .	926	1.280	2
4857.774 i3	8.77	1 1 1 .	926	1.346	2
4859.658 i3	8.4	A . . .	926	3.230	2
4860.576 i3	8.8	A . . .	926	4.148	2
4860.763 i3	8.7	A . . .	926	4.335	2
4860.838 i3	8.8	A . . .	926	4.410	2
4862.598 i3	8.7	A . . .	927	0.926	2
4862.781 i3	8.8	A . . .	927	1.109	2
4862.847 i3	8.8	A . . .	927	1.175	2
4863.602 i3	8.8	A . . .	927	1.930	2
4863.756 i3	8.7	A . . .	927	2.084	2
4863.846 i3	8.8	A . . .	927	2.174	2
4864.581 i3	8.8	A . . .	927	2.909	2
4864.703 i3	8.8	A . . .	927	3.031	2
4864.853 i3	8.7	A . . .	927	3.181	2
4866.749 i3	10.12	0 1 0 0	927	5.077	2
4866.849 i3	11.55	0 1 . .	927	5.177	2
4867.566 i3	8.7	A . . .	928	0.650	2
4867.798 i3	8.7	A . . .	928	0.882	2

J. D.	Mean.	Resid.	S	Phase	Wt.
4860.951 15	8.8	A . . .	924	4.990	2
4859.879 15	8.7	A . . .	925	4.381	2
4858.740 15	8.8	A . . .	926	4.064	2
4856.777 15	8.6	A . . .	928	4.003	2
4855.846 15	8.6	A . . .	929	4.008	2
4854.859 15	9.70	0 0 0 .	930	0.412	2
4857.708 15	8.87	1 1 1 .	926	1.800	2
4857.774 15	8.77	1 1 1 .	926	1.856	2
4859.088 15	8.4	A . . .	926	8.830	2
4860.874 15	8.8	A . . .	926	4.148	2
4860.763 15	8.7	A . . .	925	4.358	2
4860.888 15	8.8	A . . .	926	4.410	2
4862.809 15	8.7	A . . .	927	0.788	2
4862.781 15	8.8	A . . .	927	1.109	2
4862.847 15	8.8	A . . .	927	1.178	2
4863.808 15	8.8	A . . .	927	1.920	2
4863.763 15	8.7	A . . .	927	2.084	2
4863.868 15	8.8	A . . .	927	2.174	2
4864.881 15	8.8	A . . .	927	2.909	2
4864.708 15	8.8	A . . .	927	3.021	2
4864.852 15	8.7	A . . .	927	3.161	2
4866.748 15	10.78	0 1 0 0	929	5.077	2
4866.849 15	11.68	0 1 . .	927	8.174	2
4867.866 15	8.7	A . . .	926	0.650	2
4867.798 15	8.7	A . . .	926	0.882	2

J. D.	Magn.	Resid.	E	Phase	Wt.
4867.859 i3	8.8	A . . .	928	0.944	2
4868.568 i3	8.7	A . . .	928	1.652	2
4869.710 i3	8.8	A . . .	928	2.794	2
4873.579 i3	8.7	A . . .	929	1.420	2
4874.548 i3	8.80	1 1 . .	929	2.389	2
4875.713 i3	8.8	A . . .	929	3.554	2
4875.851 i3	8.8	A . . .	929	3.692	2
4881.552 i3	8.7	A . . .	930	4.149	2
4883.566 i3	8.7	A . . .	931	0.919	2
4883.693 i3	8.7	A . . .	931	1.046	2
4883.860 i3	8.8	A . . .	931	1.213	2
4884.535 i3	8.7	A . . .	931	1.888	2
4884.722 i3	8.70	0 0 0 .	931	2.075	2
4885.532 i3	8.7	A . . .	931	2.885	2
4892.532 i2	8.8	A . . .	932	4.641	2
4893.527 i2	8.90	0 0 . .	932	5.636	2
4893.730 i2	8.8	A . . .	932	5.839	2
4897.521 i2	8.7	A . . .	933	4.386	2
4898.628 i2	9.05	2 2 1 1	933	5.493	2
4898.712 i2	8.8	A . . .	933	5.577	2
4901.851 i2	8.7	A . . .	934	3.472	2
4902.786 i2	8.8	A . . .	934	4.407	2
4903.552 i2	11.60	1 1 . .	934	5.173	2
4903.689 i2	11.35	0 1 . .	934	5.310	2
4903.737 e2	10.48	2 2 1 2	934	5.358	2

t. D.	Magn.	Head.	N	Phase	Rt.
4867.859 12	8.8	A . . .	928	0.964	S
4868.869 12	8.7	A . . .	928	1.668	S
4869.710 12	8.8	A . . .	928	2.704	S
4873.875 12	8.7	A . . .	929	1.460	S
4874.946 12	8.80	J J . .	929	2.389	S
4875.718 12	8.8	A . . .	929	3.864	S
4876.861 12	8.8	A . . .	929	5.892	S
4881.882 12	8.7	A . . .	930	4.140	S
4883.866 12	8.7	A . . .	931	0.918	S
4883.892 12	8.7	A . . .	931	1.048	S
4883.880 12	8.8	A . . .	931	1.812	S
4884.838 12	8.7	A . . .	931	1.888	S
4884.728 12	8.70	O O O .	931	2.048	S
4888.882 12	8.7	A . . .	931	2.882	S
4892.892 12	8.8	A . . .	932	4.841	S
4893.827 12	8.90	O O . .	932	5.888	S
4893.780 12	8.8	A . . .	932	6.829	S
4897.821 12	8.7	A . . .	933	4.386	S
4898.628 12	9.05	J J J .	933	5.493	S
4898.718 12	8.8	A . . .	933	6.877	S
4901.881 12	8.7	A . . .	934	5.478	S
4902.786 12	8.8	A . . .	934	4.407	S
4903.882 12	10.80	J J . .	934	5.175	S
4903.889 12	11.86	O J . .	934	6.310	S
4903.784 12	10.88	S J J S	934	6.356	S

J. D.	Magn.	Resid.	E	Phase	Wt.
4904.522 i2	8.7	A . . .	935	0.900	2
4904.659 i2	8.60	1 1 . .	935	1.037	2
4904.843 i2	8.6	A . . .	935	1.221	2
4905.556 i2	8.8	A . . .	935	1.934	2
4907.594 i2	8.8	A . . .	935	3.972	2
4907.808 i2	8.4	A . . .	935	4.186	2
4910.525 i2	8.7	A . . .	936	1.659	2
4910.777 i2	8.8	A . . .	936	1.911	2
4911.523 i2	8.4	A . . .	936	2.657	2
4911.547 e2	8.7	A . . .	936	2.681	2
4911.653 i2	8.7	A . . .	936	2.787	2
4911.773 i2	8.7	A . . .	936	2.907	2
4912.519 i2	8.7	A . . .	936	3.653	2
4912.635 i2	8.7	A . . .	936	3.769	2
4912.811 i2	8.7	A . . .	936	3.945	2
4921.705 e2	8.4	A . . .	938	2.351	2
4933.551 e1	8.7	A . . .	940	3.709	2
4938.640 e1	8.4	A . . .	941	3.554	2
4954.632 e0	8.7	A . . .	944	3.814	2
4963.481 e0	8.8	A . . .	946	2.176	2
4963.492 e0	8.9	A . . .	946	2.187	2
4963.506 e0	8.8	A . . .	946	2.201	2
4963.520 e0	8.7	A . . .	946	2.215	2
4963.534 e0	8.5	A . . .	946	2.229	2
4963.589 e0	8.7	A . . .	946	2.284	2

J. D.	Magn.	Resid.	E	Phase	Wt.
4963.603 e0	8.7	A . . .	946	2.298	2
4963.617 e0	8.7	A . . .	946	2.312	2
4967.523 e1	8.5	A . . .	947	0.973	2
4968.624 e1	8.4	A . . .	947	2.074	2
4980.547 e1	8.4	A . . .	949	3.510	2
4984.468 e1	8.5	A . . .	950	2.187	2
4984.486 e1	8.5	A . . .	950	2.205	2
4984.507 e1	8.5	A . . .	950	2.226	2
4984.528 e1	8.8	A . . .	950	2.247	2
4984.548 e1	8.8	A . . .	950	2.267	2
4993.466 e2	8.8	A . . .	952	0.696	2
4993.479 e2	8.8	A . . .	952	0.710	2
4993.493 e2	8.8	A . . .	952	0.724	2
4993.507 e2	8.8	A . . .	952	0.738	2
4993.521 e2	8.8	A . . .	952	0.752	2
4993.535 e2	8.8	A . . .	952	0.766	2
4993.548 e2	8.8	A . . .	952	0.778	2
4993.562 e2	8.4	A . . .	952	0.792	2
4997.482 e2	8.7	A . . .	952	4.712	2
4997.496 e2	8.8	A . . .	952	4.726	2
4997.510 e2	8.8	A . . .	952	4.740	2
4997.524 e2	8.8	A . . .	952	4.754	2
4997.537 e2	8.8	A . . .	952	4.768	2
5010.494 e2	8.7	A . . .	955	1.993	2
5023.491 e3	8.7	A . . .	957	4.502	2
5070.905 e2	8.7	A . . .	966	4.724	2

Y. P.	Mean.	Resid.	Z	Phase	W.
4963.502 e0	8.7	A . . .	946	2.598	S
4958.617 e0	8.7	A . . .	950	3.612	S
4967.823 e1	8.8	A . . .	947	0.978	S
4968.854 e1	8.4	A . . .	942	2.074	S
4960.847 e1	8.4	A . . .	944	3.810	S
4964.456 e1	8.8	A . . .	950	2.187	S
4964.456 e1	8.8	A . . .	950	2.208	S
4964.807 e1	8.8	A . . .	950	2.580	S
4964.828 e1	8.8	A . . .	950	2.847	S
4964.808 e1	8.8	A . . .	950	2.807	S
4953.466 e2	8.8	A . . .	952	0.898	S
4953.479 e2	8.8	A . . .	952	0.710	S
4953.498 e2	8.8	A . . .	952	0.794	S
4953.807 e2	8.8	A . . .	952	0.780	S
4953.821 e2	8.8	A . . .	952	0.786	S
4953.836 e2	8.8	A . . .	952	0.786	S
4953.848 e2	8.8	A . . .	952	0.778	S
4953.862 e2	8.4	A . . .	952	0.792	S
4957.488 e2	8.7	A . . .	952	4.712	S
4957.496 e2	8.8	A . . .	952	4.780	S
4957.810 e2	8.8	A . . .	952	4.760	S
4957.824 e2	8.8	A . . .	952	4.784	S
4957.837 e2	8.8	A . . .	952	4.768	S
5010.434 e2	8.7	A . . .	956	1.993	S
5028.791 e2	8.7	A . . .	957	4.808	S
5070.908 e2	8.7	A . . .	960	4.784	S

J. D.	Magn.	Resid.	E	Phase	Wt.
5123.825 i1	12.00	1 1 . .	976	5.208	2
5124.816 i1	8.8	A . . .	977	0.955	2
5125.757 e0	8.3	A . . .	977	1.897	2
5125.841 i0	8.8	A . . .	977	1.981	2
5161.783 e1	8.4	A . . .	984	1.218	2
5180.790 e2	8.5	A . . .	987	1.495	2
5191.773 e2	9.1	A . . .	989	4.990	1
5232.641 e3	8.7	A . . .	997	3.910	2
5297.594 e1	8.4	A . . .	1010	0.692	2
5435.906 e2	8.6	A . . .	1036	2.665	2
5513.792 e1	8.4	A . . .	1051	1.898	2
5539.757 e2	8.4	A . . .	1056	1.646	2
5605.775 e3	8.7	A . . .	1068	4.740	2
5613.651 i3	8.4	A . . .	1070	2.129	2
5627.693 e2	8.7	A . . .	1072	5.682	2
5632.665 e2	9.75	0 0 0 2	1073	5.411	2
5633.712 e2	8.7	A . . .	1074	1.214	2
5642.515 i2	8.8	A . . .	1075	4.773	2
5650.578 e2	8.5	A . . .	1077	2.349	2
5653.570 i2	10.95	0 1 . .	1077	5.341	2
5658.543 e1	9.80	0 0 . .	1078	5.069	2
5658.556 i1	10.08	0 1 0 0	1078	5.082	2
5662.572 e1	8.6	A . . .	1079	3.855	2
5673.568 e1	8.5	A . . .	1081	4.363	2
5676.543 i1	8.45	1 0 . .	1082	2.094	2

J. D.		Magn.	Resid.	E	Phase	Wt.
5699.510	e1	8.40	0 0 .	1086	4.085	2
5717.458	e1	8.4	A . . .	1090	1.058	2
5864.821	e0	8.4	A . . .	1118	1.598	2
5890.773	e1	8.6	A . . .	1123	1.332	2
5891.790	e1	8.4	A . . .	1123	2.349	2
5901.796	e2	8.5	A . . .	1125	1.869	2
5902.831	e2	8.5	A . . .	1125	2.904	2
5932.725	e2	8.5	A . . .	1131	1.336	2
5971.725	e3	8.6	A . . .	1138	3.631	2
5978.651	e3	11.45	0 1 . .	1139	5.313	2
5985.705	e2	8.4	A . . .	1141	1.879	2
6008.643	e2	8.3	A . . .	1145	3.842	2
6016.649	e2	8.6	A . . .	1147	1.361	2
6030.588	e1	8.5	A . . .	1149	4.811	2
6031.596	i1	8.4	A . . .	1149	5.819	1
6033.556	e1	8.5	A . . .	1150	2.535	2
6035.522	e1	8.4	A . . .	1150	4.501	2
6061.516	e0	8.45	0 1 . .	1155	4.276	2
6083.445	e1	11.78	1 1 0 1	1159	5.229	2
6090.452	e2	8.4	A . . .	1161	1.748	2
6167.933	e2	8.3	A . . .	1175	5.816	2
6175.924	e2	8.4	A . . .	1177	3.320	2
6180.916	e2	8.4	A . . .	1178	3.068	2
6216.841	e1	8.5	A . . .	1185	2.288	2
6230.820	30	8.7	A . . .	1187	5.781	2

J. D.		Magn.	Resid.	E	Phase	Wt.
6234.853	e0	8.4	A . . .	1188	4.570	2
6245.836	e1	9.68	2 1 1 1	1190	5.067	2
6248.845	e1	8.40	0 0 . .	1191	2.832	2
6253.792	e1	8.5	A . . .	1192	2.535	2
6258.833	e1	8.3	A . . .	1193	2.333	2
6261.800	e1	11.50	0 0 . .	1193	5.300	2
6289.716	e2	8.4	A . . .	1199	1.754	2
6296.713	e2	8.6	A . . .	1200	3.508	2
6311.651	e3	8.4	A . . .	1203	2.716	1
6323.761	e3	8.60	1 1 . .	1205	4.338	2
6334.639	e3	8.4	A . . .	1207	4.729	2
6337.615	e3	8.4	A . . .	1208	2.461	2
6360.564	e2	8.5	A . . .	1212	4.434	2
6360.670	e2	8.4	A . . .	1212	4.540	2
6366.540	e2	11.40	0 0 . .	1213	5.167	2
6376.575	e2	8.4	A . . .	1215	4.714	2
6381.569	e2	8.5	A . . .	1216	4.464	2
6387.612	e1	11.72	0 0 0 1 0	1217	5.263	2
6390.592	e1	8.7	A . . .	1218	2.999	2
6394.578	e1	8.5	A . . .	1219	1.741	2
6403.491	e1	9.80	1 0 1 0	1220	5.411	2
6406.535	e1	8.45	0 1 . .	1221	3.211	2
6410.560	e0	8.4	A . . .	1222	1.995	2
6416.491	e0	8.60	0 0 . .	1223	2.678	2
6420.541	e0	8.4	A . . .	1224	1.485	2

J. D.	Magn.	Resid.	K	Phase	Wt.
6234.883 e0	8.4	A . . .	1188	4.870	2
6246.886 e1	9.68	S I I I	1190	8.067	2
6246.845 e1	8.40	O O . .	1191	8.892	2
6253.798 e1	8.5	A . . .	1192	8.886	2
6256.832 e1	8.5	A . . .	1193	2.838	2
6261.800 e1	11.60	O O . .	1193	6.800	2
6289.716 e2	8.4	A . . .	1199	1.764	2
6296.718 e2	8.6	A . . .	1200	8.808	2
6311.681 e3	8.4	A . . .	1203	2.716	1
6323.761 e3	8.60	I I . .	1205	4.838	2
6334.639 e3	8.4	A . . .	1207	4.789	2
6337.616 e3	8.4	A . . .	1208	2.461	2
6360.664 e3	8.6	A . . .	1212	4.434	2
6360.670 e3	8.4	A . . .	1212	4.840	2
6366.840 e3	11.40	O O . .	1213	8.167	2
6376.676 e3	8.4	A . . .	1215	4.714	2
6381.669 e3	8.5	A . . .	1216	4.464	2
6387.612 e1	11.72	O O D I O	1217	8.863	2
6390.682 e1	8.7	A . . .	1218	2.999	2
6394.678 e1	8.5	A . . .	1219	1.741	2
6403.491 e1	9.80	I O I O	1220	8.411	2
6406.838 e1	8.48	O I . .	1221	3.813	2
6410.880 e0	8.4	A . . .	1222	1.998	2
6416.491 e0	8.60	O O . .	1223	8.678	2
6420.841 e0	8.4	A . . .	1224	1.488	2

J. D.	Magn.	Resid.	E	Phase	Wt.
6426.482 e0	8.8	A . . .	1225	2.182	2
6433.472 e1	8.5	A . . .	1226	3.927	2
6548.899 e2	8.4	A . . .	1248	3.992	2
6552.904 e2	8.5	A . . .	1249	2.753	2
6556.897 e2	8.4	A . . .	1250	1.502	2
6574.872 e1	8.4	A . . .	1253	3.747	2
6588.777 e0	8.4	A . . .	1256	1.922	2
6601.797 e0	8.7	A . . .	1258	4.455	2
6603.794 e0	8.5	A . . .	1259	1.208	2
6603.837 e0	8.30	0 0 . .	1259	1.251	2
6644.722 e2	9.40	0 0 . .	1266	5.432	2
6647.720 e2	8.4	A . . .	1267	3.186	2
6652.649 e2	8.4	A . . .	1268	2.872	2
6655.744 e2	8.4	A . . .	1269	0.723	2
6664.698 e2	8.4	A . . .	1270	4.433	2
6687.626 e3	8.4	A . . .	1275	1.144	2
6692.694 e3	8.4	A . . .	1276	0.968	2
6693.728 e3	8.4	A . . .	1276	2.002	2
6697.636 e3	8.3	A . . .	1277	0.666	2
6719.580 e2	8.4	A . . .	1281	1.634	2
6723.605 e2	8.3	A . . .	1281	5.660	2
6731.672 e2	8.7	A . . .	1283	3.139	2
6732.586 f2	8.40	0 0 0 .	1283	4.153	2
6733.568 f2	10.87	0 0 1 1	1283	5.135	2
6754.575 e1	11.08	3 1 1 1 0 1	1287	5.166	2
6758.591 e1	8.4	A . . .	1288	3.938	2

J.	D.	Magn.	Resid.	R	Phase	Wt.
	6426.482	e0	8.8	A . . .	1228	2.188	2
	6433.472	e1	8.5	A . . .	1226	3.367	2
	6548.899	e2	8.4	A . . .	1248	3.398	2
	6582.904	e2	8.5	A . . .	1249	2.788	2
	6586.897	e2	8.4	A . . .	1250	1.802	2
	6674.872	e1	8.4	A . . .	1253	3.747	2
	6688.777	e0	8.4	A . . .	1256	1.982	2
	6601.797	e0	8.7	A . . .	1258	4.488	2
	6603.794	e0	8.5	A . . .	1259	1.908	2
	6603.837	e0	8.30	0 0 . .	1259	1.281	2
	6644.722	e2	9.40	0 0 . .	1256	5.488	2
	6647.780	e2	8.4	A . . .	1257	3.186	2
	6682.649	e2	8.4	A . . .	1268	2.872	2
	6686.744	e2	8.4	A . . .	1269	0.728	2
	6664.698	e2	8.4	A . . .	1270	4.488	2
	6687.686	e2	8.4	A . . .	1275	1.144	2
	6692.694	e2	8.4	A . . .	1276	0.958	2
	6693.728	e2	8.4	A . . .	1276	2.002	2
	6697.636	e2	8.3	A . . .	1277	0.666	2
	6719.880	e2	8.4	A . . .	1281	1.004	2
	6723.606	e2	8.3	A . . .	1281	3.660	2
	6731.672	e2	8.7	A . . .	1283	3.139	2
	6732.686	f2	8.40	0 0 0 .	1283	4.183	2
	6733.668	f2	10.87	0 0 1 1	1283	8.138	2
	6764.678	e1	12.08	8 1 1 0 1	1287	8.186	2
	6758.691	e1	8.4	A . . .	1288	3.938	2

J. D.	Magn.	Resid.	E	Phase	Wt.
6758.637 e1	8.4	A . . .	1288	3.984	2
6761.593 e1	8.37	0 0 1 .	1289	1.697	2
6739.585	8.4	A . . .	1290	4.445	2
6771.586 e1	8.4	A . . .	1291	1.202	2
6774.491 e0	8.4	A . . .	1291	4.106	2
6774.538 e0	8.6	A . . .	1291	4.153	2
6793.546 e1	8.4	A . . .	1295	2.186	2
6794.540 e1	8.4	A . . .	1295	3.180	2
6799.474 e1	8.4	A . . .	1296	2.870	2
6800.528 e1	8.4	A . . .	1296	3.924	2
6803.483 e1	8.6	A . . .	1297	1.635	2
6817.471 e2	10.85	1 0 . .	1299	5.135	2
6821.467 e2	8.4	A . . .	1300	3.887	2
6887.944 e3	8.4	A . . .	1313	2.195	2
6895.933 e2	8.7	A . . .	1314	4.941	2
6920.884 e2	8.4	A . . .	1319	3.673	2
6927.871 e2	9.68	1 0 0 0	1320	5.417	2
6938.846 e1	8.4	A . . .	1323	0.662	2
6959.841 e0	8.7	A . . .	1327	0.683	2
6976.795 e1	8.4	A . . .	1330	1.907	2
7003.749 e2	8.4	A . . .	1335	2.643	2
7006.714 e2	8.7	A . . .	1335	5.608	2
7030.718 e2	8.4	A . . .	1340	3.394	2
7076.644 e3	8.4	A . . .	1349	2.127	2
7079.648 e3	10.35	0 1 . .	1349	5.131	2

J. D.	Magn.	Resid.	E	Phase	Wt.
7097.635 e2	8.4	A . . .	1353	2.142	2
7102.667 e2	8.3	A . . .	1354	1.931	2
7110.505 e2	8.4	A . . .	1355	4.525	2
7112.562 e2	8.4	A . . .	1356	1.338	2
7122.535 e1	8.4	A . . .	1358	0.823	1
7129.535 e1	8.7	A . . .	1359	2.579	2
7161.536 e1	8.6	A . . .	1365	3.116	2
7180.518 e1	8.85	1 0 . .	1369	1.123	2
7207.435 e2	8.7	A . . .	1374	1.820	2
7295.903 e1	8.7	A . . .	1391	1.146	1
7317.812 e0	8.4	A . . .	1395	2.082	2
7317.864 e0	8.2	A . . .	1395	2.134	2
7377.671 e2	8.4	A . . .	1406	4.262	2
7408.727 e3	8.4	A . . .	1412	3.857	2
7408.782 e3	8.4	A . . .	1412	3.912	2
7428.608 e3	8.5	A . . .	1416	2.763	2
7442.639 e3	8.4	A . . .	1419	1.063	2
7442.749 e3	8.4	A . . .	1419	1.173	2
7445.637 e2	8.7	A . . .	1419	4.060	2
7455.575 e2	8.50	1 1 0 .	1421	3.510	2
7459.662 e2	8.3	A . . .	1422	2.354	2
7461.555 e2	8.5	A . . .	1422	4.246	2
7469.533 e2	8.7	A . . .	1424	1.737	2
7475.573 e2	8.60	1 1 . .	1425	2.533	2
7488.545 e1	9.30	0 0 . .	1427	5.017	2

J. D.	Magn.	Resid.	E	Phase	Wt.
7497.576 e1	8.3	A . . .	1429	3.561	2
7532.537 e1	8.75	0 1 . .	1436	1.814	2
7540.545 e1	8.4	A . . .	1437	4.578	1
7547.529 e2	8.7	A . . .	1439	1.074	2
7683.858 e0	8.4	A . . .	1465	1.068	2
7709.707 e1	8.4	A . . .	1470	0.700	2
7730.793 e2	8.6	A . . .	1474	0.812	2
7767.731 e3	8.4	A . . .	1481	1.045	2
7798.654 e3	8.55	0 1 . .	1486	5.749	2
7801.660 e3	8.5	A . . .	1487	3.512	2
7802.793 e3	8.4	A . . .	1487	4.644	2
7814.676 e2	8.45	0 1 . .	1490	0.795	2
7816.583 e2	8.80	1 1 . .	1490	2.702	2
7831.607 e2	8.4	A . . .	1493	1.995	2
7831.696 e2	8.65	1 0 . .	1493	2.084	2
7853.539 e1	8.7	A . . .	1497	2.951	2
7856.588 e1	8.45	0 1 . .	1498	0.757	2
7861.526 e1	8.4	A . . .	1498	5.695	2
7870.514 e0	8.5	A . . .	1500	4.194	2
8099.641 e2	8.7	A . . .	1544	2.600	2
8111.754 i2	8.3	A . . .	1546	4.226	2
8131.769 e3	8.35	1 0 . .	1550	3.267	2
8132.760 e3	8.4	A . . .	1550	4.258	2
8138.786 e3	9.40	1 1 . .	1551	5.040	2
8150.650 e3	8.70	A . . .	1554	1.173	2

J. D.	Magn.	Resid.	E	Phase	Wt.
8174.762 e3	8.4	A . . .	1558	4.310	2
8185.738 e2	8.70	0 0 . .	1560	4.798	2
8193.710 e2	8.50	1 1 . .	1562	2.282	2
8304.664 e2	8.45	1 0 . .	1564	2.749	2
8207.663 e2	8.4	A . . .	1564	5.748	2
8218.601 e1	8.5	A . . .	1567	0.954	2
8218.646 e1	8.5	A . . .	1567	0.999	2
8220.639 e1	8.4	A . . .	1567	2.992	2
8222.603 e1	8.90	0 0 . .	1567	4.956	2
8227.631 e1	8.5	A . . .	1568	4.740	2
8231.574 e1	8.7	A . . .	1569	3.439	2
8231.656 e1	8.4	A . . .	1569	3.521	1
8232.562 e1	8.65	0 1 . .	1569	4.427	2
8233.540 i1	10.04	1 1 0 0 0	1569	5.405	2
8234.550 i0	8.4	A . . .	1570	1.171	1
8234.622 30	8.65	1 0 . .	1570	1.243	2
8234.740 i0	8.6	A . . .	1570	1.361	2
8235.571 i0	8.3	A . . .	1570	2.192	2
8235.717 i0	8.57	2 1 0 .	1570	2.338	2
8236.575 i0	8.4	A . . .	1570	3.196	1
8236.712 i0	8.4	A . . .	1570	3.333	2
8237.542 i0	8.3	A . . .	1570	4.163	1
8238.529 e0	10.88	1 0 0 0	1570	5.150	2
8242.513 e0	8.65	A . . .	1571	3.890	2
8246.542 e0	8.75	0 1 . .	1572	2.675	2

J. D.	Magn.	Resid.	E	Phase	Wt.
8248.473 e0	8.65	1 0 . .	1572	4.606	2
8253.526 30	8.73	0 0 1 .	1573	4.406	2
8292.478 e2	8.6	A . . .	1581	1.416	2
8335.930 e3	8.40	0 0 . .	1589	2.917	2
8384.852 e2	8.4	A . . .	1598	4.647	2
8425.847 e0	8.70	0 0 . .	1606	3.694	2
8458.698 e2	10.08	0 0 0 0 1	1612	5.085	2
8461.814 e2	8.70	0 0 . .	1613	2.957	2
8496.784 e3	8.4	A . . .	1620	1.222	2
8507.776 e3	8.65	1 0 . .	1622	1.727	2
8516.655 e3	10.40	0 0 0 .	1623	5.362	2
8527.737 e3	8.4	A . . .	1626	0.713	2
8533.652 e3	8.7	A . . .	1627	1.384	2
8546.631 e2	8.40	0 0 . .	1629	3.875	2
8552.639 e2	8.4	A . . .	1630	4.639	2
8569.700 e2	8.70	0 0 . .	1633	0.725	2
8579.589 e1	10.45	3 0 3 0 1 2	1635	5.370	2
8584.621 e1	10.92	0 1 0 0	1636	5.158	2
8586.600 e1	8.4	A . . .	1637	1.893	2
8587.550 e1	8.4	A . . .	1637	2.843	2
8589.550 e1	8.40	0 0 . .	1637	4.843	2
8593.546 e1	8.4	A . . .	1638	3.595	2
8602.509 e0	8.7	A . . .	1640	2.070	2
8606.523 e0	8.45	0 1 . .	1641	0.840	2
8620.525 e1	8.4	A . . .	1643	4.354	2

J. D.		Magn.	Resid.	E	Phase	Wt.
8626.466	e1	9.50	1 0 0 1	1644	5.051	2
8626.551	e1	10.75	1 0 . .	1644	5.136	2
8637.445	e1	8.70	0 0 . .	1646	5.543	2
8637.495	e1	8.50	1 0 1 .	1646	5.593	2
8640.457	e1	8.4	A . . .	1647	3.311	2
8650.454	e2	8.4	A . . .	1649	2.820	2
8662.448	e2	8.4	A . . .	1651	4.326	2
8672.447	e2	8.4	A . . .	1653	3.838	2
8733.907	e2	8.4	A . . .	1665	2.373	2
8740.817	e2	8.7	A . . .	1666	4.040	2
8751.879	e2	8.4	A . . .	1668	4.614	2
8788.821	e0	8.7	A . . .	1675	4.852	2
8811.827	e1	8.6	A . . .	1680	1.641	2
8823.825	e2	8.4	A . . .	1682	3.152	2
8852.647	e2	8.4	A . . .	1687	5.756	2
8853.702	e2	8.4	A . . .	1688	1.567	2
8861.634	e3	8.5	A . . .	1689	4.256	2
8866.708	e3	8.4	A . . .	1690	4.087	2
8873.729	e3	8.75	0 1 . .	1692	0.620	2
8877.728	e3	8.4	A . . .	1692	4.619	2
8880.661	e3	8.35	1 0 . .	1693	2.308	2
8882.666	e3	8.50	1 1 0 0	1693	4.314	2
8896.607	e3	8.70	0 0 . .	1696	2.523	2
8904.711	e3	9.83	1 0 0 ;	1697	5.384	2
8924.661	e2	8.70	0 0 0 .	1701	4.358	2

J. D.	Magn.	Resid.	E	Phase	Wt.
8925.637 e2	11.18	1 1 1 0	1701	5.334	2
8927.649 e2	8.70	0 0 . .	1702	2.102	2
8930.642 e2	10.10	0 0 . .	1702	5.095	2
8946.559 e1	12.25	1 0 . .	1705	5.280	2
8988.525 31	11.75	0 1 . .	1713	5.294	2
9016.442 e2	8.70	0 0 . .	1719	1.748	2
9022.444 e2	8.4	A . . .	1720	2.506	2
9220.762 e2	8.4	A . . .	1758	1.568	2
9221.796 e2	8.7	A . . .	1758	2.602	2
9223.806 e3	8.7	A . . .	1758	4.612	2
9225.744 e3	8.5	A . . .	1759	1.307	2
9227.741 e3	8.3	A . . .	1759	3.304	2
9261.766 e3	8.80	0 0 . .	1766	0.623	2
9263.767 e3	8.73	1 1 1 .	1766	2.624	2
9265.629 e3	8.7	A . . .	1766	4.486	2
9268.649 e3	8.47	1 1 1 .	1767	2.262	2
9281.594 e2	8.6	A . . .	1769	4.719	2
9344.471 e0	8.7	A . . .	1781	4.669	2
9352.472 e1	8.4	A . . .	1783	2.182	2
9354.476 e1	8.4	A . . .	1783	4.186	2
9372.456 e2	8.4	A . . .	1787	1.190	2
9378.444 e2	8.5	A . . .	1788	1.934	2
9484.888 e2	8.4	A . . .	1808	3.504	2
9493.872 e1	8.5	A . . .	1810	2.002	2
9501.879 e1	8.4	A . . .	1811	4.765	2

J. D.	Magn.	Resid.	E	Phase	Wt.
9586.750 e2	8.63	1 1 1 .	1827	5.740	2
9586.792 e2	8.5	A . . .	1827	5.782	2
9589.790 e3	8.4	A . . .	1828	3.537	2
9663.553 e2	8.4	A . . .	1842	3.887	2
9674.553 e1	8.70	0 1 1 .	1844	4.398	2
9674.595 e1	8.7	A . . .	1844	4.440	2
9677.600 e1	8.4	A . . .	1845	2.202	2
9679.543 e1	8.4	A . . .	1845	4.145	2
9692.476 e1	8.4	A . . .	1848	1.347	2
9692.561 e1	8.6	A . . .	1848	1.432	2
9694.527 e1	8.5	A . . .	1848	3.398	2
9713.459 e0	8.4	A . . .	1852	1.354	2
9740.507 e2	8.4	A . . .	1857	2.181	2
9879.837 e0	11.40	1 1 . .	1883	5.177	2
9879.862 e0	12.15	0 1 . .	1883	5.202	2
9895.601 i1	12.05	0 1 . .	1886	5.219	2
9895.620 i1	12.20	0 0 . .	1886	5.230	2
9895.659 E1	12.20	0 0 . .	1886	5.269	2
9895.681 i1	11.85	1 1 1 1	1886	5.291	2
9895.703 i1	11.40	0 0 . .	1886	5.313	2
9924.624 e2	8.4	A . . .	1892	2.772	1
9930.807 e2	8.5	A . . .	1893	3.712	1
9949.782 e2	8.7	A . . .	1897	1.712	2
9953.782 e3	8.4	A . . .	1797	5.713	2
9957.814 e3	8.5	A . . .	1898	4.501	2

J. D.	Magn.	Resid.	E	Phase	Wt.
9963.775 e3	12.10	0 0 . .	1899	5.219	2
9965.744 e3	8.60	1 1 . .	1900	1.944	2
9968.745 e3	8.70	0 0 . .	1900	4.945	2
9971.674 e3	8.75	0 1 . .	1901	2.630	2
9979.748 e3	9.25	1 0 . .	1902	5.460	2
9992.692 e3	8.7	A . . .	1905	2.673	2
10003.623 e2	8.4	A . . .	1907	3.116	1
10014.651 e2	8.4	A . . .	1909	3.656	1
10017.651 e2	8.40	0 0 . .	1910	1.413	2
10021.629 e2	10.35	0 1 . .	1910	5.391	2
10039.574 e1	8.60	0 0 . .	1914	2.360	2

Table III.

Co-ordinates of Light Curve of T T Lyrae.

Des.	No.of Obs.	Mean Phase	Mean Magn.	Res.from Mean Curve	Des.	No.of Obs.	Mean Phase	Mean Magn.	Res.from Mean Curve
1	9	0.666	8.58	04	21	10	2.663	8.59	05
2	12	0.748	8.63	09	22	8	2.756	8.59	05
3	5	0.855	8.59	05	23	6	2.854	8.45	09
4	8	0.955	8.61	07	24	10	2.939	8.56	02
5	8	1.049	8.50	04	25	2	3.050	8.60	06
6	9	1.156	8.61	07	26	9	3.155	8.50	04
7	12	1.232	8.54	00	27	4	3.234	8.40	14
8	10	1.346	8.55	01	28	6	3.343	8.40	14
9	7	1.450	8.51	03	29	2	3.456	8.70	16
10	5	1.547	8.48	06	30	13	3.533	8.50	04
11	7	1.652	8.54	00	31	9	3.660	8.58	04
12	7	1.738	8.58	04	32	5	3.753	8.61	07
13	9	1.864	8.51	03	33	9	3.860	8.47	07
14	14	1.952	8.56	02	34	9	3.945	8.52	02
15	8	2.071	8.56	02	35	4	4.068	8.54	00
16	16	2.161	8.52	02	36	12	4.155	8.48	06
17	14	2.245	8.58	04	37	7	4.260	8.46	08
18	11	2.347	8.48	06	38	12	4.354	8.58	04
19	3	2.456	8.42	12	39	12	4.435	8.64	10
20	9	2.557	8.58	04	40	9	4.539	8.52	02

Table III.

Co-ordinates of Light Curve of 2 T Lyrae.

Dec. Obs.	No. of Phase	Mean Magn.	Dec. From Mean Curve	Dec. Obs.	No. of Phase	Mean Magn.	Dec. From Mean Curve
1	9	0.866	8.89	04	21	3.665	8.89	05
2	12	0.748	8.68	09	22	8	3.758	8.89	05
3	6	0.855	8.89	06	23	6	3.864	8.48	09
4	8	0.958	8.81	07	24	10	3.959	8.86	02
5	8	1.049	8.80	04	25	8	3.080	8.60	06
6	9	1.156	8.81	07	26	9	3.158	8.80	04
7	12	1.238	8.84	00	27	4	3.234	8.40	14
8	10	1.346	8.86	01	28	6	3.343	8.40	14
9	7	1.450	8.81	03	29	2	3.456	8.70	16
10	6	1.547	8.48	06	30	13	3.853	8.80	04
11	7	1.658	8.84	00	31	9	3.660	8.88	04
12	7	1.730	8.89	04	32	8	3.753	8.61	07
13	9	1.864	8.81	03	33	9	3.860	8.47	07
14	14	1.982	8.86	02	34	9	3.945	8.82	02
15	8	2.071	8.86	02	35	4	4.038	8.84	00
16	16	2.161	8.82	02	36	12	4.138	8.48	06
17	14	2.248	8.89	04	37	7	4.250	8.46	08
18	11	2.347	8.48	06	38	12	4.354	8.89	04
19	3	2.456	8.42	12	39	12	4.458	8.64	10
20	9	2.857	8.89	04	40	9	4.539	8.82	02

Des.	No.of Obs.	Mean Phase	Mean Magn.	Res.from Mean Curve
41	10	4.635	8.54	00
42	20	4.743	8.67	10
43	6	4.827	8.62	01
44	1	4.852	8.7	07
45	2	4.943	8.70	03
46	4	4.974	8.87	00
47	2	5.029	9.35	00
48	7	5.075	9.91	00
49	5	5.137	10.74	02
50	6	5.170	11.32	00
51	6	5.218	12.05	00
52	7	5.279	11.90	00
53	6	5.323	11.16	00
54	5	5.373	10.30	00
55	7	5.416	9.65	05
56	2	5.477	9.22	13
57	4	5.530	8.76	00
58	2	5.585	8.65	00
59	2	5.622	8.80	20
60	4	5.684	8.54	00
61	4	5.737	8.50	04
62	3	5.773	8.53	01
63	3	5.826	8.52	02

Dec.	No.of Obs.	Mean Phase	Mean Magn.	Res.from Mean Curve	Dec.	No.of Obs.	Mean Phase	Mean Magn.	Res.from Mean Curve
41	10	4.858	8.84	00	55	6	8.328	11.14	00
42	20	4.743	8.67	10	54	8	8.373	10.30	00
43	6	4.827	8.52	01	53	7	8.416	9.68	05
44	1	4.898	8.7	07	52	2	8.477	9.22	15
45	2	4.942	8.70	03	51	4	8.530	8.74	00
46	4	4.974	8.67	00	50	2	8.585	8.56	00
47	2	5.029	9.38	00	49	2	8.622	8.30	20
48	7	5.072	9.21	00	48	4	8.686	8.84	00
49	5	5.127	10.74	02	47	4	8.727	8.50	04
50	6	5.170	11.32	00	46	3	8.772	8.38	01
51	6	5.218	12.08	00	45	3	8.815	8.32	02
52	7	5.278	11.90	00					

Table IV.

Observations of Y Camelopardalis.

J. D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
1420.483 i2	10.80	0 0 0 .	429	080	-.074	2.470	1
1435.548 i1	10.30	0 0 . . .	434	.	-.074	1.006	2
1786.699 i2	10.35	1 0 . .	540	.	-.063	1.757	2
1786.723 i2	10.35	1 0 . .	540	.	-.063	1.781	2
1871.561 i3	10.35	1 0 . .	566	.	-.061	0.674	1
2080.785 i3	10.40	0 0 . .	629	.	-.054	1.640	2
2138.736 i3	10.45	0 1 . .	647	.	-.053	0.090	1
2138.744 i3	10.60	0 0 . .	647	.	-.053	0.098	2
2491.644 i3	11.85	1 1 0 0	753	049	-.042	2.596	1
2521.624 i2	10.72	1 0 1 1	762	032	-.041	2.824	2
2521.669 i2	10.35	1 0 . .	762	.	-.041	2.869	2
2521.683 i2	10.35	0 1 . .	762	.	-.041	2.883	2
2550.579 i3	10.40	1 1 . .	771	.	-.040	2.026	2
2552.597 i0	10.40	0 0 . .	772	.	-.040	0.739	2
2552.602 i0	10.30	0 0 . .	772	.	-.040	0.744	2
2766.911 i2	10.40	0 0 1 .	837	.	-.036	0.189	2
2788.876 i3	10.45	1 0 . .	843	.	-.035	2.320	1
2793.789 i3	10.67	0 1 0 .	845	.	-.034	0.621	1
2821.770 i3	10.40	0 0 . .	853	.	-.034	2.147	1
3468.669 i0	10.35	1 0 . .	1049	.	-.018	1.146	1
3468.732 i0	10.35	1 0 . .	1049	.	-.018	1.209	2

Table IV.

Observations of χ Cassiopeiæ.

J. D.	Magn.	Resid.	R	Sine. Time	Curve	Phase	Wt.
1620.4653	12	10.80	0 0 0 .	429	080	-.074	2.470	1
1686.5648	11	10.80	0 0 . .	494	.	-.074	1.008	2
1786.6599	12	10.88	1 0 . .	840	.	-.068	1.787	2
1786.7528	12	10.85	1 0 . .	840	.	-.068	1.781	2
1871.8671	12	10.85	1 0 . .	886	.	-.071	0.674	1
2080.7868	12	10.80	0 0 . .	889	.	-.066	1.840	2
2138.7536	12	10.46	0 1 . .	847	.	-.032	0.960	1
2138.7644	12	10.80	0 0 . .	847	.	-.068	0.098	2
2491.6644	12	11.88	1 1 0 0	783	042	-.042	2.866	1
2521.6824	12	10.72	1 0 1 1	762	038	-.041	2.874	2
2521.6869	12	10.75	1 0 . .	762	.	-.041	2.869	2
2521.6883	12	10.35	0 1 . .	762	.	-.041	2.883	2
2590.8579	12	10.40	1 1 . .	771	.	-.040	2.026	2
2592.8597	10	10.40	0 0 . .	772	.	-.040	0.739	2
2592.8602	10	10.30	0 0 . .	772	.	-.040	0.744	2
2766.9711	12	10.60	0 0 . .	837	.	-.036	0.789	2
2788.8746	12	10.48	1 0 . .	848	.	-.038	2.820	1
2793.7891	12	10.87	0 1 0 .	848	.	-.034	0.621	1
2821.7710	12	10.40	0 0 . .	885	.	-.034	2.147	1
3466.6591	10	10.38	1 0 . .	1049	.	-.018	1.146	1
3466.7528	10	10.38	1 0 . .	1049	.	-.018	1.209	2

J. D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
3468.823 i0	10.35	1 0 . .	1049	.	-.018	1.300	2
3589.772 i3	10.35	1 0 . .	1085	.	-.014	3.208	2
3895.827 i3	10.30	0 0 . .	1178	.	-.006	1.877	1
3895.890 i3	10.35	1 0 . .	1178	.	-.006	1.940	2
3897.872 i3	10.30	0 0 . .	1179	.	-.006	0.616	1
3919.771 i3	11.75	1 2 1 0	1185	.	-.005	2.681	1
3923.931 i3	10.60	0 0 0 .	1187	.	-.005	0.230	1
4236.936 i2	10.97	0 1 0 .	1281	000	+.001	2.504	2
4246.924 i3	11.48	0 0 0 1	1284	.	+.001	2.597	1
4275.921 i3	10.30	0 0 . .	1293	.	+.002	1.823	1
4647.621 e3	10.3	A . . .	1405	.	+.011	3.290	2
4667.626 e3	10.4	A . . .	1412	.	+.012	0.155	2
4678.657 i3	10.30	0 0 . .	1415	.	+.012	1.269	1
4678.680 i3	10.30	0 0 . .	1415	.	+.012	1.292	1
4678.655 e3	10.4	A . . .	1415	.	+.012	1.267	2
4706.633 i2	11.00	0 1 0 1	1423	.	+.013	2.799	2
4706.661 e2	10.45	1 0 . .	1423	.	+.013	2.827	2
4708.856 e2	10.3	A . . .	1424	.	+.013	1.716	1
4709.656 i2	11.07	0 0 1	1424	002	+.013	2.516	2
4755.654 e1	10.4	A . . .	1438	.	+.014	2.232	2
4764.617 e1	10.4	A	1441	.	+.014	1.279	2
4918.730 i1	10.40	0 0 . .	1488	.	+.017	0.027	1
4949.828 e1	10.20	1 1 . .	1497	.	+.018	1.376	2
4998.918 e3	10.4	A	1512	.	+.019	0.883	2

J. D.	Mean.	Resid.	S	Res. Time	Curve	Phase	Wt.
3466.852	10	10.38	1 0 . .	1049	.	-.018	1.300	2
3889.772	12	10.38	1 0 . .	1095	.	-.014	3.208	2
3895.827	12	10.80	0 0 . .	1178	.	-.006	1.877	1
3898.890	12	10.58	1 0 . .	1178	.	-.008	1.960	2
3897.872	12	10.80	0 0 . .	1179	.	-.006	0.616	1
3919.771	12	11.73	1 8 1 0	1185	.	-.008	2.681	1
3923.931	12	10.60	0 0 0 .	1187	.	-.008	0.290	1
4256.936	12	10.37	0 1 0 .	1281	000	+.001	2.804	2
4246.934	12	11.48	0 0 0 1	1284	.	+.001	2.897	1
4275.921	12	10.80	0 0 . .	1292	.	+.002	1.828	1
4647.681	02	10.3	A . . .	1408	.	+.011	3.290	2
4667.826	02	10.4	A . . .	1418	.	+.012	0.188	2
4678.687	12	10.30	0 0 . .	1418	.	+.012	1.269	1
4678.680	12	10.80	0 0 . .	1418	.	+.012	1.298	1
4678.688	02	10.4	A . . .	1418	.	+.012	1.287	2
4706.833	12	11.00	0 1 0 1	1428	.	+.013	2.799	2
4708.681	02	10.48	1 0 . .	1428	.	+.013	2.887	2
4708.886	02	10.3	A . . .	1428	.	+.013	1.716	1
4709.688	12	11.07	0 0 1	1428	002	+.013	3.816	2
4758.684	01	10.4	A . . .	1438	.	+.014	2.882	2
4764.617	01	10.4	A . . .	1441	.	+.014	1.879	2
4918.730	11	10.48	0 0 . .	1488	.	+.017	0.087	1
4949.828	01	10.20	1 1 . .	1497	.	+.018	1.376	2
4998.918	02	10.4	A . . .	1518	.	+.019	0.885	2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
5024.572 e3	10.3	A	1520	.	+.020	0.092	2
5070.731 e2	10.4	A	1533	.	+.020	3.277	2
5095.759 e1	10.4	A	1541	.	+.021	1.859	1
5096.645 i1	11.20	000.	1541	023	+.021	2.745	1
5096.668 i1	11.15	0 0 1 1	1541	036	+.021	2.768	2
5112.600 e0	10.25	0 1 . .	1546	.	+.021	2.171	2
5118.554 i1	10.30	0 0 . .	1548	.	+.021	1.513	1
5120.550 i1	10.30	0 0 . .	1549	.	+.021	0.203	1
5120.679 e1	10.4	A	1549	.	+.021	0.332	2
5121.656 e1	10.3	A. . . .	1549	.	+.021	1.309	1
5147.567 i2	10.40	0 0 . .	1557	.	+.023	0.773	1
5149.631 e3	10.3	A . . .	1557	.	+.023	2.836	1
5347.719 e3	11.56	0 0 0 1 1	1617	010	+.026	2.693	2
5368.696 e3	10.4	A . . .	1624	.	+.026	0.431	2
5371.756 e3	10.3	A . . .	1625	.	+.026	0.185	2
5381.685 e3	10.4	A . . .	1628	.	+.027	0.196	2
5403.690 e3	10.3	A	1634	.	+.027	2.368	2
5403.794 e3	10.65	1 0 . .	1634	.	+.027	2.472	2
5405.914 e3	10.73	0 0 1 .	1635	.	+.027	1.286	1
5407.648 e3	10.4	A	1635	.	+.027	3.020	2
5417.709 e3	10.65	1 0 . .	1638	.	+.027	3.165	1
5423.535 e3	10.4	A	1640	.	+.028	2.378	1
5427.526 e3	10.3	A	1641	.	+.028	3.064	2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase V1.
6024.872 es	10.3	A	1580	.	+.080	0.092 2
6070.781 es	10.4	A	1588	.	+.080	3.277 2
6098.789 el	10.4	A	1641	.	+.081	1.869 1
6096.645 il	11.80	000.	1641	088	+.081	8.748 1
6096.666 il	11.18	0 0 1 1	1641	086	+.081	8.768 2
6112.600 eo	10.88	0 1 . .	1646	.	+.081	8.171 2
6118.884 il	10.80	0 0 . .	1648	.	+.081	1.818 1
6120.880 il	10.30	0 0 . .	1649	.	+.081	0.208 1
6120.679 el	10.4	A	1649	.	+.081	0.282 2
6121.686 el	10.3	A	1649	.	+.081	1.809 1
6147.867 is	10.40	0 0 . .	1657	.	+.082	0.773 1
6149.081 es	10.8	A . . .	1657	.	+.082	8.886 1
6347.719 es	11.88	0 0 0 1 1	1617	010	+.086	8.693 2
6368.696 es	10.4	A . . .	1624	.	+.086	0.481 2
6371.766 es	10.3	A . . .	1628	.	+.086	0.188 2
6381.686 es	10.4	A . . .	1628	.	+.087	0.196 2
6403.690 es	10.8	A	1634	.	+.087	8.368 2
6403.794 es	10.88	1 0 . .	1634	.	+.087	8.478 2
6408.914 es	10.73	0 0 1 .	1635	.	+.087	1.286 1
6407.648 es	10.4	A	1638	.	+.087	8.020 2
6417.709 es	10.68	1 0 . .	1638	.	+.087	8.168 1
6428.858 es	10.4	A	1640	.	+.088	8.378 1
6427.826 es	10.8	A	1641	.	+.088	8.064 2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
5427.573 e3	10.4	A	1641	.	+.028	3.111	2
5427.619 e3	10.3	A	1641	.	+.028	3.157	1
5463.687 e1	10.4	A	1652	.	+.028	2.862	2
5471.663 e0	10.3	A	1655	.	+.028	0.920	1
5488.601 e1	10.4	A	1660	.	+.029	1.328	2
5506.621 e2	10.75	1 0 . .	1665	.	+.029	2.819	2
5520.669 e3	10.4	A	1670	.	+.029	0.338	1
5539.695 e3	10.4	A	1675	.	+.030	2.836	1
5544.711 e3	10.5	A	1677	.	+.030	1.240	1
5627.537 e2	10.3	A	1702	.	+.030	1.428	1
5652.790 e0	10.3	A	1710	.	+.031	0.238	2
5658.858 e0	10.4	A	1711	.	+.031	3.000	2
5674.742 e1	10.4	A	1716	.	+.031	2.357	2
5679.853 e1	10.4	A	1718	.	+.031	0.857	2
5685.894 e2	10.35	1 0 . .	1720	.	+.032	0.287	2
5690.602 e2	10.3	A	1721	.	+.032	1.689	2
5695.797 e2	10.3	A	1723	.	+.032	0.273	2
5709.749 e3	10.4	A	1727	.	+.032	1.004	2
5717.896 e3	11.30	1 2 0 1	1729	020	+.032	2.540	2
5719.899 i3	10.40	0 0 . .	1730	.	+.032	1.237	1
5719.854 e3	10.4	A	1730	.	+.032	1.192	2
5720.847 e3	10.3	A	1730	.	+.032	2.185	2
5723.868 e3	10.4	A	1731	.	+.033	1.900	2
5737.757 e3	11.38	0 1 1 0 1	1735	036	+.033	2.567	2

I.D.	Magn.	Nodal	Z	Res. Time	Curve	Phase	Wt.
6427.572 e3	10.4	A	1641	.	+.028	3.113	2
6427.619 e3	10.3	A	1641	.	+.028	3.187	1
6428.887 e1	10.4	A	1656	.	+.028	2.882	2
6471.063 e0	10.3	A	1656	.	+.028	0.320	1
6488.601 e1	10.4	A	1660	.	+.029	1.328	2
6506.683 e2	10.76	I 0 . .	1668	.	+.029	2.819	2
6520.669 e3	10.4	A	1670	.	+.029	0.338	1
6539.698 e3	10.4	A	1678	.	+.030	2.856	1
6544.711 e2	10.5	A	1677	.	+.030	1.240	1
6547.587 e3	10.3	A	1702	.	+.030	1.428	1
6566.790 e0	10.3	A	1710	.	+.031	0.238	2
6568.668 e0	10.4	A	1713	.	+.031	3.000	2
6574.746 e1	10.4	A	1716	.	+.031	2.857	2
6579.685 e1	10.4	A	1718	.	+.031	0.857	2
6588.894 e2	10.26	I 0 . .	1720	.	+.032	0.287	2
6590.602 e2	10.3	A	1721	.	+.032	1.889	2
6596.797 e2	10.3	A	1728	.	+.032	0.278	2
6709.749 e3	10.4	A	1727	.	+.032	1.004	2
6717.896 e3	11.30	I 2 0 I	1729	030	+.032	2.540	2
6719.899 i3	10.40	0 0 . .	1730	.	+.032	1.287	1
6719.884 e3	10.4	A	1730	.	+.032	1.192	2
6720.847 e3	10.3	A	1730	.	+.032	2.188	2
6723.868 e3	10.4	A	1731	.	+.032	1.900	2
6737.787 e3	11.38	0 I I 0 I	1738	036	+.033	2.867	2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
5749.831 e3	10.3	A	1739	.	+.033	1.418	1
5753.718 e3	10.5	A	1740	.	+.033	2.000	2
5755.692 e3	10.4	A	1741	.	+.033	0.668	2
5755.850 e3	10.5	A	1741	.	+.033	0.826	1
5769.570 e3	10.50	1 1 . .	1745	.	+.033	1.324	2
5770.640 e3	10.4	A	1745	.	+.133	2.394	2
5775.849 e3	11.07	0 0 1 .	1747	.	+.033	0.992	1
5775.925 e3	10.3	A	1747	.	+.033	1.068	1
5780.611 e3	10.67	0 0 1 .	1748	.	+.033	2.448	2
5787.629 i3	10.52	1 1 1 0	1750	.	+.033	2.855	2
5788.623 e3	10.5	A	1751	.	+.033	0.543	2
5789.918 e3	10.3	A	1751	.	+.033	1.848	1
5791.675 e3	10.4	A	1752	.	+.033	0.290	1
5791.819 e3	10.4	A	1752	.	+.033	0.434	1
5800.519 i2	11.10	0 0 0 .	1754	025	+.033	2.522	2
5800.697 e2	11.17	1 1 1 .	1754	038	+.033	2.700	2
5804.534 e2	10.4	A	1756	.	+.033	0.926	2
5808.587 i2	10.40	0 0 . .	1757	.	+.033	0.673	1
5811.675 e2	10.4	A	1758	.	+.033	0.455	1
5832.620 e0	10.3	A	1764	.	+.033	1.565	2
5840.591 e0	10.4	A	1766	.	+.033	2.925	2
5842.557 e0	10.53	1 1 1 .	1767	.	+.033	1.585	2
5843.537 e0	11.27	0 0 1 .	1767	052	+.033	2.565	2
5854.630 e1	10.4	A	1771	.	+.033	0.435	2

J.D.	Magn.	Depth.	X	Res. Time	Curve	Phase	Tt.
8749.831 es	10.3	A	1789	.	+.033	1.418	1
8752.718 es	10.8	A	1740	.	+.033	2.000	2
8756.698 es	10.4	A	1741	.	+.033	0.666	2
8758.860 es	10.3	A	1741	.	+.033	0.826	1
8759.870 es	10.80	1 1 . .	1746	.	+.033	1.324	2
8770.660 es	10.4	A	1746	.	+.133	2.394	2
8778.849 es	11.07	0 0 1 .	1747	.	+.033	0.992	1
8778.958 es	10.3	A	1747	.	+.033	1.068	1
8780.611 es	10.67	0 0 1 .	1748	.	+.033	2.448	2
8787.629 is	10.82	1 1 1 0	1750	.	+.033	2.856	2
8788.653 es	10.3	A	1751	1	+.033	0.843	2
8789.918 es	10.3	A	1751	.	+.033	1.848	1
8791.678 es	10.4	A	1752	.	+.033	0.790	1
8791.819 es	10.4	A	1752	.	+.033	0.484	1
8800.819 is	11.10	0 0 0 .	1754	038	+.033	2.828	2
8800.697 es	11.17	1 1 1 .	1754	038	+.033	2.700	2
8804.854 es	10.4	A	1756	.	+.033	0.956	2
8808.867 is	10.40	0 0 1 .	1757	.	+.033	0.673	1
8811.676 es	10.4	A	1758	.	+.033	0.485	1
8832.820 es	10.3	A	1764	.	+.033	1.566	2
8840.891 es	10.4	A	1766	.	+.033	2.965	2
8842.887 es	10.83	1 1 1 .	1767	.	+.033	1.888	2
8843.887 es	11.27	0 0 1 .	1767	038	+.033	2.568	2
8854.830 es	10.4	A	1771	.	+.033	0.458	2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
5855.537 e1	10.57	0 0 1 .	1771	.	+.033	1.342	2
5858.599 e1	10.4	A	1772	.	+.033	1.099	2
5875.679 e2	10.3	A	1777	.	+.034	1.649	1
5880.732 e2	10.3	A	1779	.	+.034	0.091	1
5888.625 e3	10.3	A	1781	.	+.034	1.371	2
5891.618 e3	10.70	0 0 0 .	1782	.	+.034	1.059	2
5901.577 e3	10.4	A	1785	.	+.034	1.101	2
5918.638 e3	10.3	A	1790	.	+.034	1.634	2
5918.680 e3	10.3	A	1790	.	+.034	1.676	1
6001.585 e1	10.3	A	1815	.	+.034	1.944	2
6030.494 e0	10.3	A	1824	.	+.034	1.104	1
6030.903 e0	10.3	A	1824	.	+.034	1.513	2
6043.846 e1	10.53	1 1 1 .	1828	.	+.034	1.235	2
6048.822 e1	10.4	A	1829	.	+.034	2.905	2
6052.778 e2	10.3	A	1831	.	+.034	0.251	2
6056.673 e2	10.4	A	1832	.	+.034	0.840	2
6064.657 e2	10.3	A	1834	.	+.034	2.213	2
6076.886 e3	10.3	A	1838	.	+.034	1.221	2
6082.687 e3	10.4	A	1840	.	+.034	0.411	2
6092.749 e3	10.4	A	1843	.	+.034	0.556	2
6102.776 e3	10.4	A	1846	.	+.034	0.666	2
6114.833 e3	10.83	0 1 0 .	1849	038	+.034	2.807	2
6115.842 e3	10.3	A	1850	.	+.034	0.510	2
6136.821 e3	10.4	A	1856	.	+.034	1.656	2

J.D.	Magn.	Hemis.	S	Sun. Time	Curve	Phase	%
5886.827 e1	10.3V	O O I .	1771	.	+.083	1.342	S
5886.899 e1	10.4	A	1772	.	+.083	1.099	S
5876.679 e2	10.3	A	1777	.	+.084	1.649	I
5880.752 e2	10.3	A	1779	.	+.084	0.091	I
5888.888 e2	10.3	A	1781	.	+.084	1.371	S
5891.618 e2	10.70	O O O .	1782	.	+.084	1.089	S
5901.877 e2	10.4	A	1786	.	+.084	1.101	S
5918.638 e2	10.3	A	1790	.	+.084	1.654	S
5918.680 e2	10.3	A	1790	.	+.084	1.676	I
6001.888 e1	10.3	A	1815	.	+.084	1.944	S
6030.494.e0	10.3	A	1824	.	+.084	1.104	I
6030.903 e0	10.3	A	1824	.	+.084	1.818	S
6043.846 e1	10.58	I I I .	1828	.	+.084	1.838	S
6048.822 e1	10.4	A	1829	.	+.084	2.908	S
6052.778 e2	10.3	A	1831	.	+.084	0.281	S
6056.679 e2	10.4	A	1832	.	+.084	0.860	S
6064.687 e2	10.3	A	1834	.	+.084	2.213	S
6076.886 e2	10.3	A	1838	.	+.084	1.821	S
6082.687 e2	10.4	A	1840	.	+.084	0.411	S
6092.749 e2	10.4	A	1843	.	+.084	0.856	S
6102.776 e2	10.4	A	1846	.	+.084	0.666	S
6114.883 e2	10.38	O I O .	1849	088	+.084	2.807	S
6118.848 e2	10.4	A	1850	.	+.084	0.810	S
6136.981 e2	10.4	A	1856	.	+.084	1.656	S

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
6145.744 e3	10.4	A	1859	.	+.034	0.662	2
6146.714 e3	10.4	A	1859	.	+.034	1.632	2
6151.894 e3	10.3	A	1861	.	+.034	0.201	2
6153.764 e3	10.3	A	1861	1	+.034	2.071	2
6155.722 e3	10.4	A	1862	.	+.034	0.723	2
6156.888 e3	10.3	A	1862	.	+.034	1.889	1
6159.808 e2	10.4	A	1863	.	+.034	1.503	2
6159.922 e2	10.4	A	1863	.	+.034	1.617	1
6163.840 e2	10.3	A	1864	.	+.034	2.229	2
6163.917 e2	10.3	A	1864	.	+.034	2.306	1
6166.716 e2	10.4	A	1865	.	+.034	1.800	2
6168.731 e2	10.37	0 1 0 .	1866	.	+.034	0.509	2
6172.778 e2	10.4	A	1867	.	+.034	1.250	2
6174.715 e2	10.3	A	1867	.	+.034	3.188	1
6175.675 e2	10.45	1 0 . .	1868	.	+.034	0.842	1
6176.755 e2	10.4	A	1868	.	+.034	1.922	2
6180.710 e1	11.44	0 1 2 1 0	1869	035	+.034	2.570	2
6189.736 e1	10.3	A	1872	.	+.034	1.680	1
6191.581 e1	10.3	A	1873	.	+.034	0.219	2
6191.703 e1	10.3	A	1873	.	+034	0.341	1
6205.655 e0	10.3	A	1877	.	+.034	1.070	2
6206.803 e0	10.3	A	1877	.	+.034	2.218	1
6210.683 e0	11.10	0 0 0 .	1878	066	+.034	2.792	1
6216.568 e1	10.3	A	1880	.	+.034	2.065	2

I.D.									
6146.764	e5	10.4	A	.	.	.	1866	.	+.034	0.662	E
6146.714	e5	10.4	A	.	.	.	1866	.	+.034	1.066	E
6161.894	e5	10.3	A	.	.	.	1861	.	+.034	0.801	E
6158.764	e5	10.3	A	.	.	.	1861	.	+.034	1.071	E
6156.762	e5	10.4	A	.	.	.	1862	.	+.034	0.728	E
6156.088	e5	10.4	A	.	.	.	1862	.	+.034	1.089	I
6159.608	e5	10.4	A	.	.	.	1863	.	+.034	1.205	E
6159.922	e5	10.4	A	.	.	.	1863	.	+.034	1.817	I
6163.860	e5	10.3	A	.	.	.	1864	.	+.034	2.229	E
6163.917	e5	10.3	A	.	.	.	1864	.	+.034	2.806	I
6166.716	e5	10.4	A	.	.	.	1868	.	+.034	1.800	E
6168.781	e5	10.37	0	1	0	.	1868	.	+.034	0.809	D
6172.776	e5	10.4	A	.	.	.	1867	.	+.034	1.760	E
6174.716	e5	10.3	A	.	.	.	1867	.	+.034	8.128	I
6178.678	e5	10.45	1	0	.	.	1868	.	+.034	0.848	I
6176.788	e5	10.4	A	.	.	.	1868	.	+.034	1.928	E
6180.710	e1	11.24	0	1	R	1	0	1869	088	+.034	2.870	E
6189.736	e1	10.3	A	.	.	.	1878	.	+.034	1.680	I
6191.881	e1	10.3	A	.	.	.	1879	.	+.034	0.819	E
6191.708	e1	10.3	A	.	.	.	1879	.	+.034	0.841	I
6208.688	e0	10.3	A	.	.	.	1897	.	+.034	1.090	E
6208.803	e0	10.3	A	.	.	.	1877	.	+.034	8.218	I
6210.688	e0	11.30	0	0	0	.	1878	088	+.034	8.798	I
6216.368	e1	10.3	A	.	.	.	1880	.	+.034	8.088	E

J.D.		Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
6217.788	e1	10.3	A	1890	.	+.034	3.285	2
6223.640	e1	11.10	0 0 0 .	1882	033	+.034	2.526	2
6226.767	e1	10.47	1 1 1 . .	1883	.	+.034	2.347	1
6235.553	e2	10.4	A	1886	.	+.034	2.216	2
6237.656	e2	10.4	A	1887	.	+.034	0.013	2
6246.557	e2	10.47	1 1 1 .	1889	.	+.034	2.303	1
6265.675	e3	10.3	A	1895	.	+.034	1.587	2
6266.581	e3	11.10	0 0 0 .	1895	002	+.034	2.493	1
6300.593	e3	10.3	A	1906	.	+.034	0.143	2
6313.816	e3	10.3	A	1910	.	+.034	0.144	1
6348.557	e2	10.3	A	1920	.	+.034	1.830	1
6369.808	e1	10.4	A	1926	.	+.034	3.249	1
6369.868	e1	10.4	A	1927	.	+.034	0.003	2
6371.828	e1	10.77	0 0 1	1927	.	+.034	1.963	1
6372.863	e1	10.40	0 0 . . .	1927	.	+.034	2.998	1
6376.872	e1	10.4	A	1929	.	+.034	0.396	2
6386.786	e0	10.4	A	1932	.	+.034	0.395	2
6386.833	e0	10.30	1 1 . .	1932	.	+.034	0.442	2
6388.714	e0	10.3	A	1932	.	+.034	2.323	2
6390.902	e0	10.4	A	1933	.	+.034	1.205	2
6406.790	e1	10.48	1 1 1 0	1938	.	+.034	0.566	2
6407.839	e1	10.3	A	1938	.	+.034	1.615	1
6414.908	e1	10.3	A	1940	.	+.034	2.073	2
6415.781	e2	10.3	A	1940	.	+.034	2.947	2
6416.912	e2	10.4	A	1941	.	+.034	0.773	2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
6422.818 e2	10.3	A	1943	.	+.034	0.067	2
6426.782 e2	10.4	A	1944	.	+.034	0.726	2
6427.804 e2	10.4	A	1944	.	+.034	1.748	2
6428.858 e2	10.68	1 1 1 2	1944	.	+.034	2.802	2
6429.822 e2	10.25	0 1 . .	1945	.	+.034	0.460	2
6438.777 e3	10.83	0 0 1 .	1947	.	+.036	2.805	2
6439.896 e3	10.60	0 0 . .	1948	.	+.034	0.619	2
6445.876 e3	10.3	A	1949	.	+.034	3.293	1
6447.763 e3	10.4	A	1950	.	+.034	1.874	2
6449.719 e3	10.4	A	1951	.	+.034	0.525	2
6454.754 e3	10.4	A	1952	.	+.034	2.254	1
6456.769 e3	10.3	A	1953	.	+.034	0.964	2
6459.827 e3	10.3	A	1954	.	+.034	0.716	2
6462.898 e3	10.3	A	1955	.	+.034	0.482	2
6465.530 e3	10.3	A	1955	.	+.034	3.114	2
6465.915 e3	10.50	0 0 . .	1956	.	+.034	0.193	1
6466.872 e3	10.3	A	1956	.	+.034	1.150	1
6467.915 e3	10.3	A	1956	.	+.034	2.193	2
6471.724 e3	11.67	1 1 1 .	1957	.	+.034	2.696	1
6472.720 e3	10.57	0 2 3	1958	.	+.034	0.387	1
6475.834 e3	10.3	A	1959	.	+.034	0.195	2
6477.743 e3	10.50	2 1 1	1959	.	+.034	2.104	1
6485.714 e3	10.70	0 0 0 0	1962	.	+.034	0.159	1
6485.835 e3	10.3	A	1962	.	+.034	0.280	1
6495.826 e3	10.3	A	1965	.	+.034	0.354	2

J.D.		Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
6497.736	e3	10.45	1 0 . .	1965	.	+.034	2.264	1
6499.687	e3	10.68	1 0 0 0 .	1966	.	+.034	0.909	1
6505.781	e3	10.4	A	1968	.	+.033	0.393	2
6507.799	e3	10.57	0 0 1 . .	1968	.	+.033	2.411	2
6515.810	e3	10.3	A	1971	.	+.033	0.505	1
6517.817	e3	11.20	0 0 . . .	1971	.	+.033	2.512	1
6518.760	e3	10.3	A	1972	.	+.033	0.150	2
6522.729	e3	10.3	A	1973	.	+.033	0.813	2
6536.572	e2	10.70	0 0 . .	1977	.	+.033	1.433	2
6536.731	e2	10.4	A	1977	.	+.033	1.592	2
6545.642	e1	10.60	0 0 . .	1980	.	+.033	0.585	1
6545.760	e1	10.4	A	1980	.	+.033	0.703	2
6552.828	e1	10.4	A	1982	.	+.033	1.160	2
6564.749	e0	10.67	0 0 1 .	1985	.	+.033	3.164	2
6569.529	e0	10.3	A	1987	.	+.033	1.332	1
6569.659	e0	10.3	A	1987	.	+.033	1.462	2
6583.679	e1	10.3	A	1991	.	+.033	2.259	2
6585.597	e1	10.3	A	1992	.	+.033	0.872	2
6587.547	e1	10.90	0 1 1 .	1992	066	+.033	2.822	1
6587.683	e1	10.3	A	1992	.	+.033	2.958	2
6603.561	e2	10.3	A	1997	.	+.032	2.308	1
6605.615	e2	10.55	1 0 1 .	1998	.	+.032	1.056	1
6609.661	e2	10.60	0 0 . .	1999	.	+.032	1.797	2
6617.702	e3	10.4	A	2001	.	+.032	3.225	2

J.D.	Magn.	Resid.	E.	Res. Time.	Curve	Phase	Wt.
6625.636 e3	10.4	A	2004	.	+.032	1.243	2
6659.587 e3	10.3	A	2014	.	+.032	2.138	1
6717.860 e2	10.85	1 0 . .	2035	.	+.031	0.913	1
6750.826 e0	10.3	A	2042	.	+.031	0.825	1
6760.743 e0	10.3	A	2045	.	+.030	0.826	1
6770.791 e1	10.4	A	2048	.	+.030	0.959	2
6776.850 e1	10.65	1 0 . .	2050	.	+.030	0.407	1
6781.904 e2	10.3	A	2051	.	+.030	2.156	2
6796.731 e2	10.3	A	2056	.	+.030	0.455	1
6801.820 e3	10.4	A	2057	.	+.030	2.240	2
6803.856 e3	10.50	1 1 . .	2058	.	+.030	0.970	2
6806.842 e3	10.60	0 0 . .	2059	.	+.030	0.650	2
6815.724 e3	10.3	A	2061	.	+.030	2.921	1
6822.766 e3	10.4	A	2064	.	+.030	0.047	1
6824.736 e3	10.4	A	2064	.	+.030	2.017	2
6826.769 e3	10.4	A	2065	.	+.030	0.744	1
6828.702 e3	11.60	0 0 . .	2065	004	+.030	2.677	1
6833.626 e3	10.4	A	2067	.	+.030	0.990	1
6835.822 e3	10.4	A	2067	.	+.030	3.185	2
6858.827 e3	10.4	A	2074	.	+.030	3.052	2
6861.704 e3	11.90	0 0 0 .	2075	.	+.030	2.623	1
6869.767 e3	10.4	A	2078	.	+.030	0.770	2
6869.767 e3	10.4	A	2078	.	+.030	0.770	2
6874.733 e3	10.80	0 0 0 .	2079	020	+.030	2.430	1

J.D.	Magn.	Zenith.	E.	Sea. Time.	Curve	Phase	Tr.
6668.656 e8	10.4	A	2004	.	+.088	1.248	2
6689.667 e8	10.5	A	2014	.	+.088	2.138	1
6717.860 e8	10.65	I O . .	2028	.	+.081	0.913	1
6750.826 e0	10.5	A	2042	.	+.081	0.826	1
6760.743 e0	10.8	A	2048	.	+.080	0.826	1
6770.791 e1	10.4	A	2048	.	+.080	0.989	2
6776.880 e1	10.65	I O . .	2050	.	+.080	0.407	1
6781.904 e2	10.5	A	2051	.	+.080	2.186	2
6796.781 e2	10.5	A	2056	.	+.080	0.456	1
6801.820 e3	10.4	A	2057	.	+.080	2.240	2
6803.886 e3	10.60	I I . .	2058	.	+.080	0.970	2
6806.842 e3	10.60	O O . .	2059	.	+.080	0.680	2
6818.764 e3	10.8	A	2061	.	+.080	2.921	1
6822.766 e3	10.4	A	2064	.	+.080	0.047	1
6824.786 e3	10.4	A	2064	.	+.080	2.017	2
6826.789 e3	10.4	A	2065	.	+.080	0.744	1
6828.708 e3	11.80	O O . .	2065	004	+.080	2.677	1
6833.656 e3	10.4	A	2067	.	+.080	0.990	1
6836.822 e3	10.5	A	2067	.	+.080	2.188	2
6838.827 e3	10.4	A	2074	.	+.080	2.082	2
6861.704 e3	11.90	O O O .	2079	.	+.080	2.622	1
6869.767 e3	10.4	A	2078	.	+.080	0.770	2
6869.767 e3	10.4	A	2078	.	+.080	0.770	2
6874.758 e3	10.80	O O O .	2079	080	+.080	2.420	1

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
6876.630 e3	10.3	A	2080	.	+.030	1.021	1
6884.640 e3	10.4	A	2082	.	+.030	2.420	1
6890.709 e2	10.3	A	2084	.	+.030	1.877	2
6891.661 e2	10.60	0 0 0 .	2084	.	+.030	2.829	1
6900.729 e2	10.3	A . . .	2087	.	+.030	1.981	2
6902.655 e2	10.4	A	2088	.	+.030	0.611	1
6905.708 e2	10.63	1 0 0 .	2089	.	+.029	0.349	2
6908.646 e2	10.3	A	2089	.	+.029	3.287	1
6915.760 e1	10.4	A	2092	.	+.029	0.484	2
6922.562 e1	10.3	A	2094	.	+.029	0.675	1
6927.664 e0	10.90	0 1 1 .	2095	005	+.029	2.470	2
6936.532 e0	10.4	A	2098	.	+.029	1.421	1
6944.629 e1	10.3	A	2100	.	+.029	2.906	2
6958.640 e1	10.47	1 1 1 .	2105	.	+.028	0.390	2
6960.536 e2	10.3	A	2105	.	+.028	2.285	1
7085.351 e2	10.4	A	2143	.	+.026	1.991	1
7102.807 e1	10.65	0 1 . .	2148	.	+.026	1.420	1
7115.820 e0	10.4	A	2152	.	+.026	2.212	1
7117.872 e0	10.60	0 0 . .	2153	.	+.026	0.958	1
7123.891 e0	10.4	A	2155	.	+.026	0.366	1
7124.812 e0	10.4	A	2155	.	+.026	1.287	1
7125.829 e0	10.4	A	2155	.	+.026	2.304	1
7126.800 e0	10.4	A	2155	.	+.026	3.275	1
7127.831 e0	10.4	A	2156	.	+.026	1.000	1

I.D.	Temp.	Media.	I	Res. Time	Curve	Phase	Wt.
6876.680 es	10.3	A	8080	.	+.080	1.082	1
6884.660 es	10.4	A	8088	.	+.080	8.420	1
6890.708 es	10.3	A	8094	.	+.080	1.877	2
6891.661 es	10.80	0 0 0 .	8094	.	+.080	8.829	1
6900.729 es	10.3	A	8097	.	+.080	1.981	2
6902.686 es	10.4	A	8088	.	+.080	0.611	1
6908.708 es	10.68	1 0 0 .	8089	.	+.089	0.349	2
6908.646 es	10.3	A	8089	.	+.089	8.287	1
6918.760 ej	10.4	A	8098	.	+.089	0.484	2
6922.686 ej	10.3	A	8094	.	+.089	0.878	1
6927.664 eo	10.90	0 1 1 .	8096	008	+.089	8.470	2
6936.888 eo	10.4	A	8090	.	+.089	1.481	1
6944.629 ej	10.3	A	8100	.	+.089	2.906	2
6958.640 ej	10.47	1 1 1 .	8106	.	+.088	0.890	2
6960.686 es	10.3	A	8108	.	+.088	8.288	1
7088.881 es	10.4	A	8148	.	+.086	1.991	1
7102.807 ej	10.68	0 1 . .	8148	.	+.086	1.420	1
7118.820 eo	10.4	A	8158	.	+.086	8.818	1
7117.878 eo	10.60	0 0 . .	8158	.	+.086	0.968	1
7128.801 eo	10.4	A	8168	.	+.086	0.866	1
7134.818 eo	10.4	A	8168	.	+.086	1.887	1
7138.829 eo	10.4	A	8168	.	+.086	8.704	1
7138.800 eo	10.4	A	8168	.	+.086	8.878	1
7137.881 eo	10.4	A	8166	.	+.086	1.000	1

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
7133.791 e1	10.4	A	2158	.	+.025	0.351	1
7145.620 e1	10.48	0 0 0 1	2161	.	+.025	2.264	1
7149.848 e2	10.3	A	2162	.	+.025	3.187	1
7158.833 e2	10.3	A	2165	.	+.025	2.255	1
7158.878 e2	10.4	A	2165	.	+.025	2.300	2
7160.888 e2	10.4	A	2166	.	+.024	1.006	2
7163.847 e2	10.3	A	2167	.	+.024	0.659	2
7198.682 e3	10.80	0 0 0 .	2177	018	+.024	2.439	1
7215.694 e3	10.4	A	2182	.	+.024	2.924	2
7235.907 e3	10.4	A	2188	.	+.024	3.303	1
7236.555 e3	10.27	1 0 0 .	2189	.	+.024	0.646	2
7236.651 e3	10.4	A	2189	.	+.024	0.742	1
7244.732 e3	10.3	A	2191	.	+.024	2.212	2
7252.531 i3	10.35	o 1 . .	2194	.	+.023	0.095	1
7252.625 e3	10.4	A	2194	.	+.023	0.189	1
7258.638 e2	10.3	A	2195	.	+.023	2.895	1
7259.637 e2	10.4	A	2196	.	+.023	0.589	2
7270.653 e2	10.4	A	2199	.	+.022	1.690	2
7274.678 e1	10.4	A	2200	.	+.022	2.407	2
7275.630 e1	10.4	A	2201	.	+.022	0.054	1
7275.675 e1	10.4	A	2201	.	+.022	0.099	2
7304.577 e0	11.54	1 0 0 0 1	2209	009	+.021	2.556	2
7326.624 e2	10.55	0 1 . .	2216	.	+.021	1.462	1
7376.579 e3	10.3	A	2231	.	+.020	1.834	1

I.D.	Magn.	Resid.	E	Base Type	Chi/v	Pbase	Yb.
7283.761 e1	10.4	A	8158	.	+.028	0.381	I
7248.620 e1	10.48	0 0 0 1	8161	.	+.028	8.864	I
7249.848 e2	10.3	A	8162	.	+.028	3.187	I
7283.888 e2	10.33	A	8165	.	+.028	8.888	I
7288.878 e2	10.4	A	8168	.	+.028	8.300	I
7260.888 e2	10.4	A	8166	.	+.024	1.006	I
7263.847 e2	10.3	A	8167	.	+.024	0.889	I
7298.688 e2	10.80	0 0 0 .	8172	018	+.024	8.459	I
7218.694 e2	10.4	A	8188	.	+.024	8.984	I
7238.807 e2	10.4	A	8189	.	+.024	3.308	I
7238.888 e2	10.87	1 0 0 .	8189	.	+.024	0.846	I
7236.681 e2	10.4	A	8189	.	+.024	0.748	I
7244.798 e2	10.3	A	8191	.	+.024	8.818	I
7288.881 i2	10.38	0 1 . .	8194	.	+.028	0.098	I
7288.688 e2	10.4	A	8194	.	+.028	0.189	I
7288.838 e2	10.3	A	8195	.	+.028	8.808	I
7289.687 e2	10.4	A	8199	.	+.028	0.889	I
7270.688 e2	10.4	A	8196	.	+.028	1.880	I
7274.678 e1	10.4	A	8800	.	+.028	8.407	I
7278.680 e1	10.4	A	8801	.	+.028	0.084	I
7275.678 e1	10.4	A	8801	.	+.028	0.099	I
7804.877 e0	17.94	1 0 0 0 1	8809	000	+.021	8.886	I
7826.884 e2	10.88	0 1 . .	8810	.	+.021	1.488	I
7876.878 e2	10.3	A	8881	.	+.020	1.884	I

J.D.		Magn.	Resid.	E	Res. Time	Curve	Phase	Wt
7454.768	e2	10.4	A	2255	.	+.019	0.691	1
7469.832	e1	11.12	1 0 0 0	2259	024	+.018	2.535	2
7509.817	e1	10.67	0 0 1 .	2271	.	+.017	2.856	1
7510.813	e1	10.4	A . . .	2272	.	+.017	0.546	1
7511.873	e2	10.3	A	2272	.	+.017	1.608	1
7518.771	e2	10.4	A	2274	.	+.016	1.895	1
7538.823	e3	10.4	A	2280	.	+.016	2.115	2
7539.852	e3	10.4	A	2280	.	+.016	3.144	2
7551.708	e3	10.3	A	2284	.	+.016	1.878	1
7557.818	e3	10.45	1 0 . . .	2286	.	+.016	1.277	2
7557.848	e3	10.40	0 0 . .	2286	.	+.016	1.307	2
7564.714	e3	10.55	1 0 . .	2288	.	+.016	1.561	2
7581.884	e3	10.40	0 0 . .	2293	.	+.016	2.204	2
7581.932	e3	10.3	A	2293	.	+.016	2.252	1
7582.777	e3	10.4	A	2293	.	+.015	3.098	2
7606.812	e3	10.3	A	2301	.	+.015	0.688	2
7622.675	e2	10.4	A	2306	.	+.014	0.023	2
7622.752	e2	10.4	A	2306	.	+.014	0.100	2
7630.545	e2	10.4	A	2308	.	+.014	1.282	1
7642.665	e1	10.3	A	2312	.	+.014	0.179	1
7642.708	e1	10.3	A	2312	.	+.014	0.222	1
7656.617	e0	10.3	A	2316	.	+.013	0.909	2
7660.558	e0	10.4	A	2317	.	+.013	1.544	2
7668.572	e0	10.3	A	2319	.	+.013	2.947	1

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
7677.656 e1	10.4	A	2322	.	+.013	2.113	2
7677.710 e1	10.3	A	2322	.	+.013	2.167	1
7693.558 e2	10.3	A	2327	.	+.012	1.487	2
7707.573 e2	10.50	1 1 . .	2331	.	+.012	2.280	2
7845.837 e0	10.3	A	2373	.	+.009	1.715	2
7862.808 e1	10.3	A	2378	.	+.009	2.159	2
7865.755 e1	10.35	0 1 . .	2375	.	+.009	1.801	2
7879.836 e2	12.23	1 0 0 .	2383	.	+.008	2.661	2
7894.729 e2	10.4	A	2388	.	+.008	1.027	1
7905.815 e3	10.3	A	2391	.	+.007	2.198	2
7905.877 e3	10.4	A	2391	.	+.007	2.260	2
7915.680 e3	10.3	A	2394	.	+.007	2.146	1
7937.837 e3	10.62	1 1 1 2	2401	.	+.007	1.164	1
7949.696 e3	10.30	0 0 . .	2404	.	+.006	3.107	2
7950.751 e3	10.40	0 0 . .	2405	.	+.006	0.857	2
7955.640 e3	10.70	0 0 . .	2406	.	+.006	2.440	2
7968.725 e3	10.40	0 0 . .	2410	.	+.006	2.303	2
7994.706 e2	10.4	A	2418	.	+.005	1.840	2
8013.617 e1	10.4	A	2424	.	+.004	0.917	2
8013.661 e1	10.3	A	2424	.	+.004	0.961	1
8015.624 e1	10.6	A	2424	.	+.004	2.924	1
8017.737 e1	10.4	A	2425	.	+.004	1.732	2
8022.635 e0	10.3	A	2427	.	+.004	0.017	2
8034.652 e0	10.3	A	2430	.	+.004	2.098	2

J.D.	Magn.	Resid.	S	Res. Time	Curve	Phase	Wt.
7677.666 ej	10.4	A	8888	.	+.013	2.118	8
7677.710 ej	10.8	A	8888	.	+.013	2.147	1
7693.088 es	10.8	A	8887	.	+.013	1.487	8
7707.678 es	10.80	I I . .	8881	.	+.013	2.280	8
7846.837 eo	10.8	A	8878	.	+.009	1.718	8
7866.808 ej	10.8	A	8878	.	+.009	2.189	8
7868.788 ej	10.88	0 I . .	8878	.	+.009	1.801	8
7879.038 es	12.88	I 0 0 .	8888	.	+.008	2.661	8
7894.729 es	10.4	A	8888	.	+.008	1.027	1
7908.818 es	10.8	A	8881	.	+.007	2.198	8
7908.877 es	10.4	A	8881	.	+.007	2.880	8
7918.880 es	10.8	A	8884	.	+.007	2.146	1
7937.887 es	10.88	I I I S	8401	.	+.007	1.164	1
7949.098 es	10.80	0 0 . .	8808	.	+.006	3.107	8
7980.781 es	10.40	0 0 . .	8408	.	+.006	0.887	8
7988.640 es	10.70	0 0 . .	8406	.	+.006	2.440	8
7968.728 es	10.40	0 0 . .	8410	.	+.006	2.808	8
7994.706 es	10.4	A	8418	.	+.008	1.840	8
8018.617 ej	10.4	A	8884	.	+.004	0.917	8
8018.661 ej	10.3	A	8884	.	+.004	0.981	1
8018.684 ej	10.6	A	8884	.	+.004	2.924	1
8017.787 ej	10.4	A	8888	.	+.004	1.788	8
8028.688 eo	10.3	A	8887	.	+.004	0.017	8
8084.688 eo	10.8	A	8880	.	+.004	8.098	8

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
8043.600 e1	10.3	A	2433	.	-.003	1.149	2
8045.661 e1	10.3	A	2433	.	-.003	3.210	2
8076.628 e3	10.2	A	2443	.	+.002	1.120	1
8078.580 e3	10.4	A	2443	.	+.002	3.072	2
8088.592 e3	10.4	A	2446	.	+.002	3.168	2
8095.568 e3	10.3	A	2449	.	+.002	0.227	2
8185.841 e2	10.3	A	2476	.	.000	1.253	2
8250.824 e2	10.57	1 0 0 .	2496	.	-.001	0.129	2
8258.857 e2	10.62	0 0 1 0	2498	.	-.001	1.551	1
8274.772 e3	10.3	A	2503	.	-.001	0.939	2
8281.518 e3	10.6	A	2505	.	-.002	1.075	1
8284.757.e3	10.4	A	2506	.	-.002	1.009	1
8284.807 e3	10.4	A	2506	.	-.002	1.059	2
8305.860 e3	10.50	1 1 1 1 .	2512	.	-.003	2.279	1
8313.591 e3	10.4	A	2515	.	-.003	0.093	2
8333.625 e3	10.4	A	2512	.	-.004	0.295	1
8333.673 e3	10.3	A	2521	.	-.004	0.343	2
8334.778 e3	10.3	A	2521	.	-.004	1.448	2
8341.743 e3	10.3	A	2523	.	-.004	1.802	1
8341.788 e3	10.3	A	2523	.	-.004	1.847	2
8349.939 e3	10.60	0 0 0 .	2526	.	-.004	0.081	2
8355.569 e2	10.4	A	2527	.	-.004	2.405	1
8363.561 e2	10.3	A	2530	.	-.004	0.780	2
8371.670 e1	10.6	A	2532	.	-.004	1.977	2

J.D.	Magn.	Resid.	E	Has. Time	Curve	Phase	Wt.
8064.600 e1	10.3	A	8438	.	-.002	1.149	2
8068.661 e1	10.3	A	8433	.	-.002	3.210	2
8078.688 e2	10.2	A	8442	.	-.002	1.180	1
8078.680 e2	10.4	A	8443	.	-.002	3.072	2
8088.692 e2	10.4	A	8446	.	-.002	3.168	2
8098.668 e2	10.3	A	8449	.	-.002	0.287	2
8188.661 e2	10.3	A	8476	.	.000	1.283	2
8250.864 e2	10.87	1 0 0 .	8496	.	-.001	0.129	2
8258.887 e2	10.62	0 0 1 0	8498	.	-.001	1.881	1
8274.772 e2	10.3	A	8503	.	-.001	0.939	2
8281.818 e2	10.6	A	8505	.	-.002	1.078	1
8284.787 e2	10.4	A	8506	.	-.002	1.009	1
8284.807 e2	10.4	A	8506	.	-.002	1.089	2
8306.860 e2	10.80	1 1 1 .	8513	.	-.002	2.279	1
8313.891 e2	10.4	A	8515	.	-.002	0.093	2
8338.622 e2	10.4	A	8523	.	-.004	0.206	1
8339.672 e2	10.3	A	8521	.	-.004	0.843	2
8364.778 e2	10.3	A	8531	.	-.004	1.448	2
8341.743 e2	10.3	A	8533	.	-.004	1.808	1
8341.788 e2	10.2	A	8533	.	-.004	1.847	2
8349.909 e2	10.60	0 0 0 .	8534	.	-.004	0.081	2
8356.909 e2	10.4	A	8537	.	-.004	3.408	1
8366.861 e2	10.3	A	8540	.	-.004	0.780	2
8371.670 e1	10.8	A	8535	.	-.004	1.977	2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
8371.735 e1	10.3	A	2532	.	-.004	2.042	2
8371.778 e1	10.4	A	2532	.	-.004	2.085	1
8377.786 e1	10.3	A	2534	.	-.004	1.482	1
8377.874 e1	10.4	A	2534	.	-.004	1.570	2
8384.611 e1	10.3	A	2536	.	-.004	1.696	1
8388.613 e0	10.3	A	2537	.	-.004	2.391	1
8397.535 e0	10.4	A	2540	.	-.005	1.397	2
8397.579 e0	10.4	A	2540	.	-.005	1.441	1
8397.633 e0	10.45	1 0 . .	2540	.	-.005	1.495	2
8404.718 e1	10.40	1 1 . .	2542	.	-.005	1.968	2
8405.642 e1	10.3	A	2542	.	-.005	2.892	2
8407.596 e1	10.4	A	2543	.	-.005	1.541	1
8407.840 e1	10.4	A	2543	.	-.005	1.785	2
8419.544 e1	10.4	A	2547	.	-.005	0.266	2
8425.736 e2	10.4	A	2548	.	-.006	3.153	2
8431.585 e2	10.3	A	2550	.	-.006	2.391	2
8432.668 e2	10.3	A	2551	.	-.006	0.168	1
8438.553 e2	11.20	0 0 0 .	2552	005	-.006	2.747	2
8458.747 e3	10.4	A	2558	.	-.006	2.107	2
8459.645 e3	10.4	A	2559	.	-.006	0.697	2
8476.724 e3	10.4	A	2564	.	-.007	1.252	2
8491.611 e3	10.3	A	2568	.	-.007	2.916	2
8512.618 e3	10.4	A	2575	.	-.009	0.786	2
8545.553 e2	10.40	0 0 . .	2585	.	-.010	0.668	2

I.D.	Mags.	Resid.	Σ	Res. Time	Curve	Phase	Wt.
8571.758 ej	10.3	A	2822	.	-.004	2.042	2
8571.776 ej	10.4	A	2822	.	-.004	2.088	1
8577.786 ej	10.3	A	2824	.	-.004	1.482	1
8577.874 ej	10.4	A	2824	.	-.004	1.870	2
8584.611 ej	10.3	A	2826	.	-.004	1.696	1
8588.613 eo	10.3	A	2827	.	-.004	2.391	1
8597.588 eo	10.4	A	2830	.	-.005	1.397	2
8597.679 eo	10.4	A	2830	.	-.005	1.441	1
8597.682 eo	10.45	1 0 . .	2830	.	-.005	1.495	2
8604.718 ej	10.40	1 . .	2832	.	-.005	1.958	2
8605.646 ej	10.3	A	2832	.	-.005	2.092	2
8607.596 ej	10.4	A	2833	.	-.005	1.641	1
8607.840 ej	10.4	A	2834	.	-.005	1.788	2
8619.664 ej	10.4	A	2837	.	-.005	0.256	2
8628.736 eg	10.4	A	2840	.	-.006	3.183	2
8631.588 eg	10.3	A	2840	.	-.006	2.391	2
8632.668 eg	10.3	A	2841	.	-.006	0.168	1
8638.585 eg	11.80	0 0 0 .	2842	098	-.006	2.147	2
8639.747 eg	10.4	A	2838	.	-.006	2.107	2
8650.648 eg	10.4	A	2837	.	-.006	0.697	2
8676.724 eg	10.4	A	2834	.	-.007	1.282	2
8691.611 eg	10.3	A	2828	.	-.007	2.916	2
8712.618 eg	10.4	A	2819	.	-.009	0.786	2
8746.655 eg	10.40	0 0 . .	2806	.	-.010	0.668	2

J.D.		Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
8547.773	e2	10.70	1 0 1 .	2585	.	-.010	2.888	1
8551.801	e2	10.3	A	2587	.	-.010	0.305	1
8552.807	e2	10.4	A	2587	.	-.010	0.311	2
8567.879	e1	10.4	A	2591	.	-.010	3.161	2
8586.770	e0	10.3	A	2597	.	-.010	2.220	2
8592.836	e1	10.25	0 1 . .	2559	.	-.010	1.676	2
8600.868	e1	10.4	A	2601	.	-.010	3.097	2
8640.752	e3	10.50	1 1 . .	2613	.	-.012	3.318	1
8646.754	e3	11.25	0 1 0 0 1	2615	046	-.012	2.709	2
8647.938	e3	10.4	A	2616	.	-.012	0.587	2
8650.879	e3	10.3	A	2617	.	-.012	0.223	2
8657.896	e3	10.4	A	2619	.	-.012	0.328	2
8659.886	e3	12.02	2 1 1 1 0	2619	.	-.012	2.618	2
8661.825	e3	10.60	0 0 0 .	2620	.	-.013	1.253	1
8661.868	e3	10.3	A	2620	.	-.013	1.296	2
8671.533	e3	10.3	A	2623	.	-.013	1.044	2
8672.778	e3	10.43	1 0 0 .	2623	.	-.013	2.289	1
8687.692	e3	10.28	1 0 0 0	2628	.	-.013	0.675	2
8691.627	e3	10.4	A	2629	.	-.013	1.305	1
8691.803	e3	10.3	A	2629	.	-.013	1.481	2
8704.616	e3	10.4	A	2633	.	-.014	1.072	2
8705.614	e3	10.3	A	2633	.	-.014	2.070	1
8707.600	e3	10.55	0 1 . . .	2634	.	-.014	0.751	2
8707.681	e3	10.4	A	2634	.	-.014	0.832	2

J.D.	Magn.	Metric.	S	Res. Time	Curve	Chaos	Vt.
8647.778 e2	10.70	1 0 1 .	2588		-.010	2.888	1
8651.801 e2	10.3	A	2587		-.010	0.209	1
8652.807 e2	10.4	A	2587		-.010	0.811	2
8657.879 e1	10.4	A	2581		-.010	3.161	2
8656.770 e0	10.3	A	2587		-.010	2.220	2
8592.858 e1	10.38	0 1 . .	2589		-.010	1.878	2
8600.868 e1	10.4	A	2601		-.010	3.097	2
8640.758 e2	10.80	1 1 . .	2618		-.012	2.818	1
8646.784 e2	11.28	0 1 0 1	2618	046	-.012	2.709	2
8647.988 e2	10.4	A	2618		-.012	0.867	2
8650.879 e2	10.8	A	2617		-.012	0.283	2
8687.896 e2	10.4	A	2619		-.012	0.328	2
8688.886 e2	12.08	1 1 1 0	2619		-.012	2.618	2
8681.888 e2	10.60	0 0 0 .	2620		-.012	1.283	1
8681.888 e2	10.3	A	2620		-.012	1.286	2
8671.888 e2	10.3	A	2622		-.013	1.044	2
8672.772 e2	10.48	1 0 0 .	2625		-.013	2.289	1
8687.898 e2	10.28	1 0 0 0	2628		-.013	0.678	2
8691.667 e2	10.4	A	2629		-.013	1.308	1
8691.803 e2	10.8	A	2629		-.013	1.481	2
8704.616 e2	10.4	A	2633		-.014	1.078	2
8708.614 e2	10.3	A	2635		-.014	2.070	1
8707.600 e2	10.88	0 1 . . .	2634		-.014	0.781	2
8707.681 e2	10.4	A	2634		-.014	0.888	2

J.D.		Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
8715.800	e2	10.3	A	2636	.	-.014	2.339	1
8721.649	e2	10.4	A	2638	.	-.014	1.577	2
8721.695	e2	10.4	A	2638	.	-.014	1.623	1
8728.727	e2	10.6	A	2640	.	-.014	2.043	1
8733.855	e2	10.4	A	2642	.	-.014	0.560	2
8735.685	e1	10.50	1 1 . .	2642	.	-.014	2.389	2
8745.700	e1	10.60	1 1 0 .	2645	.	-.015	2.489	2
8747.575	e1	10.6	A	2646	.	-.015	1.058	2
8749.616	e1	10.3	A	2646	.	-.015	3.099	2
8750.564	e1	10.3	A	2647	.	-.015	0.742	2
8752.564	e0	11.23	1 0 0 .	2647	017	-.015	2.741	2
8754.702	e0	10.3	A	2648	.	-.015	1.573	2
8763.798	30	10.4	A	2651	.	-.016	0.753	2
8778.556	e1	10.57	1 0 0 .	2655	.	-.016	2.288	2
8792.548	e2	10.3	A	2659	.	-.016	3.057	2
8808.564	e3	10.80	0 0 . .	2664	.	-.017	2.545	2
8808.597	e3	11.5	A	2664	.	-.017	2.578	1
8809.638	e3	10.4	A	2665	.	-.017	0.316	2
8811.580	e3	10.4	A	2665	.	-.017	2.255	2
8851.797	e3	10.90	1 0 1	2677	000	-.018	2.806	2
8957.890	e1	10.3	A	2709	.	-.021	3.128	2
8992.800	e3	10.3	A	2720	.	-.022	1.680	2
8996.781	e3	10.30	0 0 . .	2721	.	-.022	2.355	2
8996.823	e3	10.4	A	2721	.	-.022	2.397	1
9001.935	e3	10.55	1 0 . .	2723	.	-.022	0.898	2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
9014.927 e3	10.4	A	2727	.	-.023	0.669	2
9015.689 e3	10.3	A	2727	.	-.023	1.431	2
9018.723 e3	10.4	A	2728	.	-.023	1.159	2
9018.768 e3	10.65	0 1 . .	2728	.	-.023	1.204	1
9018.903 e3	10.4	A	2728	.	-.023	1.339	2
9023.779 e3	10.4	A	2729	.	-.024	2.910	1
9025.948 e3	10.3	A	2729	.	-.024	3.080	2
9033.802 e3	10.3	A	2732	.	-.024	3.017	1
9036.847 e3	11.22	0 1 0 0	2733	013	-.024	2.757	2
9037.682 e3	10.3	A	2734	.	-.024	0.286	1
9052.758 e3	10.3	A	2738	.	-.024	2.140	2
9053.568 e3	10.3	A	2738	.	-.024	2.950	1
9061.545 e3	10.4	A	2741	.	-.024	1.010	1
9067.629 e3	10.4	A	2743	.	-.024	0.483	1
9067.762 e3	10.4	A	2743	.	-.024	0.616	2
9089.554 e2	11.62	1 1 1 0	2749	035	-.024	2.574	1
9093.554 e2	10.4	A	2750	.	-.025	3.269	1
9263.856 e3	10.3	A	2802	.	-.030	1.681	2
9271.608 e2	10.73	0 0 1 .	2804	018	-.030	2.823	2
9290.791 e1	10.30	0 0 . .	2810	.	-.031	2.175	1
9308.529 e0	10.3	A	2815	.	-.031	3.386	2
9319.759 e0	10.3	A	2819	.	-.031	1.394	2
9333.530 e1	10.3	A	2823	.	-.032	1.945	2
9333.617 e1	10.4	A	2823	.	-.032	2.032	1

I.D.	Beam.	Beam.	S	Res. Time	Curve	Phase	W.
9014.927 es	10.4	A	8787	.	-.028	0.669	2
9018.689 es	10.3	A	8787	.	-.028	1.481	2
9018.763 es	10.4	. . . . .	8788	.	-.028	1.189	2
9018.768 es	10.05	0 1 . . .	8788	.	-.028	1.804	1
9018.909 es	10.4	A	8788	.	-.028	1.289	2
9023.779 es	10.4	A	8789	.	-.024	2.910	1
9028.948 es	10.3	A	8789	.	-.024	3.080	2
9038.808 es	10.3	A	8788	.	-.024	3.017	1
9036.847 es	11.22	0 1 0 0	8788	018	-.024	3.787	2
9037.688 es	10.3	A	8784	.	-.024	0.886	1
9038.768 es	10.3	A	8788	.	-.024	1.140	2
9038.868 es	10.3	A	8788	.	-.024	1.950	1
9041.849 es	10.4	A	8741	.	-.024	1.010	1
9047.689 es	10.4	A	8748	.	-.024	0.488	1
9047.768 es	10.4	. . . . .	8748	.	-.024	0.816	2
9089.884 es	11.22	1 1 1 0	8743	028	-.024	3.874	1
9093.884 es	10.4	A	8760	.	-.028	3.869	1
9268.986 es	10.3	A	8804	.	-.030	1.681	2
9271.808 es	10.72	0 0 0 1 .	8804	018	-.030	3.863	2
9290.791 es	10.30	0 0 . .	8810	.	-.031	3.176	1
9308.889 es	10.3	A	8818	.	-.031	3.886	2
9319.768 es	10.8	A	8819	.	-.031	1.894	2
9383.886 es	10.3	A	8823	.	-.032	1.948	2
9383.817 es	10.4	A	8823	.	-.032	2.082	1

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
9333.641 e1	10.4	A	2823	.	-.032	2.056	1
9337.908 e2	10.3	A	2824	.	-.032	3.018	1
9338.872 e2	10.4	A	2825	.	-.032	0.676	1
9343.690 e2-	10.3	A	2826	.	-.033	2.190	2
9344.870 e2	10.4	A	2827	.	-.033	0.064	1
9370.732 e3	10.85	0 1 . . .	2834	046	-.033	2.788	1
9370.754 e3	10.65	0 1 . . .	2834	.	-.033	2.810	2
9370.914 e3	10.4	A	2834	.	-.033	2.970	1
9391.675 e3	10.3	A	2841	.	-.034	0.593	2
9401.597 e3	10.4	A	2844	.	-.034	0.599	1
9403.555 e3	11.23	0 0 1 .	2844	022	-.034	2.557	1
9403.785 e3	11.30	0 0 0 .	2844	010	-.034	2.787	1
9409.832 e3	10.40	2 1 0 1	2846	.	-.035	2.223	2
9439.875 e3	11.04	1 1 1 .	2855	037	-.036	2.517	2
9441.940 e3	10.3	A	2856	.	-.036	1.277	2
9442.617 e3	10.3	A	2856	.	-.036	1.954	2
9460.606 e2	10.3	A	2862	.	-.036	0.108	2
9461.660 e2	10.3	A	2862	.	-.036	1.162	1
9462.622 e2	10.50	1.1 . .	2862	.	-.036	2.124	1
9482.623 e1	10.4	A	2868	.	-.037	2.292	1
9492.572 e0	10.3	A	2871	.	-.037	2.323	1
9501.590 e1	10.3	A	2874	.	-.038	1.425	1
9503.822 e1	10.4	A	2875	.	-.038	0.351	2
9518.548 e2	10.4	A	2879	.	-.038	1.854	1
9520.687 e2	10.4	A	2880	.	-.039	0.688	2

T.D.	Mags.	Resid.	R	Bas. Tune	Curve	Phase	T.
9883.641 ft	10.4	A	2882	.	-.028	2.080	1
9887.908 ft	10.3	A	2884	.	-.028	2.018	1
9888.872 ft	10.4	A	2888	.	-.028	0.876	1
9843.890 ft	10.3	A	2886	.	-.028	2.120	2
9744.870 ft	10.4	A	2887	.	-.028	0.084	1
9770.736 ft	10.68	0 1 . . .	2884	046	-.028	2.786	1
9770.704 ft	10.68	0 1 . . .	2884	.	-.028	2.810	2
9770.914 ft	10.4	A	2884	.	-.028	2.970	1
9891.078 ft	10.3	A	2841	.	-.034	0.886	2
9401.807 ft	10.4	A	2844	.	-.034	0.899	1
9408.888 ft	11.88	0 0 1 .	2846	028	-.034	2.867	1
9403.788 ft	11.80	0 0 0 .	2844	010	-.034	2.787	1
9409.882 ft	10.80	1 0 1	2846	.	-.038	2.888	2
9439.878 ft	11.04	1 1 1 .	2886	027	-.038	2.817	2
9441.960 ft	10.8	A	2886	.	-.038	1.877	2
9442.817 ft	10.8	A	2886	.	-.036	1.984	2
9460.806 ft	10.8	A	2888	.	-.036	0.108	2
9481.660 ft	10.8	A	2888	.	-.038	1.188	1
9488.888 ft	10.80	1 1 . .	2882	.	-.036	2.184	1
9488.888 ft	10.4	A	2888	.	-.037	2.208	1
9498.878 ft	10.8	A	2881	.	-.037	2.888	1
9801.880 ft	10.8	A	2884	.	-.038	1.488	1
9808.888 ft	10.4	A	2878	.	-.038	0.881	2
9818.848 ft	10.4	A	2879	.	-.038	1.884	1
9880.887 ft	10.4	A	2880	.	-.038	0.880	2

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
9673.729 e0	10.65	0 1 . .	2926	.	-.042	1.679	1
9690.835 e1	10.3	A	2931	.	-.042	2.258	1
9697.749 e1	10.95	2 0 0 0	2933	017	-.042	2.561	1
9706.857 e2	10.4	A	2936	.	-.043	1.754	1
9715.828 e2	10.50	1 1 . .	2939	.	-.043	0.809	2
9726.587 e3	10.3	A	2942	.	-.043	1.652	2
9729.876 e3	10.3	A	2943	.	-.044	1.636	1
9733.882 e3	10.4	A	2944	.	-.044	2.337	2
9735.842 e3	10.73	1 1 1 . . .	2945	.	-.044	0.991	2
9738.906 e3	10.4	A	2946	.	-.044	0.750	1
9744.791 e3	10.43	2 0 1	2948	.	-.044	0.023	1
9753.677 e3	10.3	A	2950	.	-.044	2.298	2
9757.833 e3	10.3	A	2951	.	-.044	3.149	1
9777.698 e3	10.4	A	2957	.	-.045	3.181	2
9781.572 e3	10.55	1 0 0 1	2959	.	-.045	0.444	1
9782.786 e3	10.60	0 0 . .	2959	.	-.045	1.658	1
9782.925 e3	10.3	A	2959	.	-.045	1.797	2
9795.614 e3	10.55	1 1 1 .	2963	.	-.046	1.265	2
9796.736 e3	10.4	A	2963	.	-.046	2.387	1
9796.866 e3	11.10	0 0 0 0 .	2963	060	-.046	2.517	2
9798.578 e3	10.4	A	2964	.	-.046	0.923	1
9800.580 e3	10.3	A	2964	.	-.046	2.926	2
9806.900 e3	11.77	0 0 1 .	2966	010	-.046	2.634	2
9807.698 e3	10.3	A	2967	.	-.046	0.036	2

I.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Fl.
9572.729 e0	16.46	0 1 . .	2962	.	-.042	1.879	I
9830.858 e1	10.3	A	2951	.	-.042	2.258	I
9597.749 e1	10.98	1 0 0 0	2932	817	-.042	2.861	I
9706.887 e2	10.4	A	2926	.	-.042	1.784	I
9718.828 e2	10.69	1 1 . .	2929	.	-.042	0.809	I
9726.567 e2	10.3	A	2948	.	-.043	1.688	I
9729.876 e2	10.3	A	2943	.	-.044	1.886	I
9732.882 e2	10.4	A	2964	.	-.044	2.857	I
9736.862 e2	10.78	1 1 1 . . .	2965	.	-.044	0.981	I
9738.906 e2	10.4	A	2946	.	-.044	0.780	I
9744.791 e2	10.48	1 0 1	2942	.	-.044	0.082	I
9758.077 e2	10.3	A	2950	.	-.044	2.298	I
9767.852 e2	10.3	A	2953	.	-.044	2.149	I
9777.808 e2	10.4	A	2957	.	-.043	2.181	I
9781.872 e2	10.56	1 0 0 1	2939	.	-.042	0.444	I
9782.756 e2	10.60	0 0 . .	2965	.	-.043	1.658	I
9782.958 e2	10.3	A	2959	.	-.043	1.797	I
9792.614 e2	10.58	1 1 1 .	2958	.	-.044	1.268	I
9796.756 e2	10.4	A	2963	.	-.044	2.387	I
9796.866 e2	11.10	0 0 0 0 .	2966	080	-.044	2.817	I
9798.678 e2	10.4	A	2964	.	-.044	0.268	I
9800.880 e2	10.8	A	2964	.	-.044	2.958	I
9806.900 e2	13.77	0 0 1 .	2966	010	-.044	2.034	I
9807.868 e2	10.8	A	2967	.	-.044	0.036	I

J.D.	Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
9823.700 e2	10.4	A	2971	.	-.046	2.905	1
9823.875 e2	10.4	A	2971	.	-.046	3.080	2
9834.829 e1	10.4	A	2975	.	-.047	0.812	2
9835.655 e1	10.4	A	2975	.	-.047	1.618	2
9839.562 m1	10.30	0 0 . .	2976	.	-.047	2.240	2
9839.543 e1	10.4	A	2976	.	-.047	2.221	2
9863.548 m0	10.4	A	2983	.	-.047	3.086	2
9881.766 e1	10.4	A	2989	.	-.048	1.470	2
9888.568 e2	10.4	A	2991	.	-.048	1.660	1
9902.622 E3	10.90	0 0 . .	2995	050	-.049	2.492	2
9902.647 E3	11.10	0 0 . .	2995	057	-.049	2.517	2
10550.603 i2	11.90	0 0 0 .	3191	070	-.066	2.604	2
10550.613 i2	11.97	0 1 0 .	3191	064	-.066	2.614	2
10550.620 i2	12.10	0 0 0 .	3191	.	-.066	2.621	2
10550.637 i2	12.23	1 0 0 .	3191	.	-.066	2.638	2
10550.650 i2	12.13	1 1 1 .	3191	..	-.066	2.651	2
10550.659 i2	12.13	0 0 1 .	3191	.	-.066	2.660	2
10550.666 i2	12.10	1 1 0 .	3191	.	-.066	2.667	2
10550.677 i2	11.90	0 0 0 .	3191	060	-.066	2.678	2
10550.686 i2	11.90	1 1 0 .	3191	051	-.066	2.687	2
10550.694 i2	11.73	1 0 0 .	3191	061	-.066	2.695	2
10550.703 i2	11.60	1 1 0 .	3191	064	-.066	2.704	2
10550.713 i2	11.43	1 0 0 .	3191	074	-.066	2.714	2
10550.720 i2	11.33	1 0 0 .	3191	078	-.066	2.721	2
10550.729 i2	11.30	0 1 1 .	3191	071	-.066	2.730	2
10550.738 i2	11.20	0 0 0 .	3191	078	-.066	2.739	2

J.D.		Magn.	Resid.	E	Res. Time	Curve	Phase	Wt.
10550.749	i2	11.13	0 0 1 .	3191	073	-.066	2.750	2
10550.757	i2	11.13	0 1 0 .	3191	065	-.066	2.758	2
10550.764	i2	11.13	0 0 1 .	3191	058	-.066	2.765	2
10550.776	i2	11.03	0 0 1 .	3191	061	-.066	2.777	2

TABLE V

COORDINATES OF LIGHT CURVE OF Y CAMELOPARDALIS

Des.	No of Obs.	Mean Phase	Mean Magn	Res. from Mean Curve	Des.	No of Obs.	Mean Phase	Mean Magn.	Res. from Mean Curve
1	21	0.720	10.39	01	22	18	2.819	10.33	05
2	16	0.822	10.38	00	23	28	2.910	10.37	01
3	16	0.912	10.33	05	24	11	2.979	10.36	02
4	18	1.020	10.41	03	25	5	3.023	10.37	01
5	13	1.111	10.38	00	26	9	3.062	10.42	00
6	14	1.217	10.40	02	27	5	3.102	10.69	09
7	22	1.325	10.39	01	28	6	3.145	10.80	03
8	17	1.411	10.38	00	29	9	3.182	11.08	00
9	14	1.509	10.40	02	30	11	3.224	11.30	05
10	16	1.609	10.48	10	31	4	3.272	11.94	15
11	18	1.706	10.41	03	32	5	3.298	12.04	01
12	11	1.811	10.36	02	33	10	3.342	11.89	06
13	24	1.915	10.42	04	34	7	3.382	11.34	13
14	13	2.002	10.36	02	35	9	3.421	11.16	04
15	16	2.117	10.41	03	36	10	3.466	10.84	04
16	14	2.219	10.40	02	37	9	3.497	10.59	01
17	23	2.318	10.36	02	38	5	3.541	10.39	01
18	10	2.425	10.38	00	39	16	3.594	10.36	02
19	17	2.510	10.34	04	40	14	3.729	10.36	02
20	11	2.613	10.39	01	41	15	3.812	10.40	02
21	13	2.716	10.37	01	42	12	3.925	10.35	03

TABLE VI

VISUAL PHOTOMETRIC OBSERVATIONS OF Y CAMELOPARDALIS FROM H. A. 69 PART II, 151.

Des.	E.	Phase	Magn.	Res. Time	Des.	E.	Phase	Magn.	Res. Time
1	162	1.698	10.69	.	21	281	3.352	11.86	+.004
2	"	1.708	10.66	.	22	"	3.363	11.66	.000
3	"	2.644	10.60		23	"	3.372	11.39	-.023
4	163	3.639	10.60		24	287	3.439	11.05	+.007
5	173	3.336	12.06	+.006	25	"	3.452	10.98	+.008
6	"	3.347	11.92	+.005	26	"	3.465	10.83	.
7	"	3.359	11.77	+.002	27	"	3.484	10.72	.
8	"	3.373	11.63	+.003	28	295	3.129	10.86	.
9	"	3.386	11.42	-.003	29	"	3.149	10.96	+.013
10	176	2.401	10.57	.	30	376	3.258	12.03	-.004
11	"	2.243	10.60	.	31	386	3.197	11.44	+.001
12	178	3.766	10.62	.	32	"	3.209	11.47	+.010
13	180	1.269	10.60	.	33	"	3.229	11.72	+.003
14	181	1.963	10.60	.	34	"	3.243	11.92	-.003
15	185	0.716	10.61	.	35	"	3.260	12.08	-.003
16	197	1.038	10.60	.	36	"	3.279	12.30	.
17	272	3.076	10.70		37	"	3.297	12.33	.
18	279	0.953	10.61		38	"	3.314	12.21	.000
19	280	3.618	10.64		39	"	3.337	11.92	-.006
20	281	3.341	11.98	+.005	40	395	3.441	11.05	+.005

Des.	E.	Phase	Magn.	Res. Time	Des.	E.	Phase	Magn.	Res. Time
41	395	3.453	10.98	+.005	59	939	1.268	10.54	.
42	"	3.469	10.87	.	60	"	2.276	10.62	.
43	"	3.488	10.78	.	61	"	2.281	10.65	.
44	"	3.516	10.63	.	62	940	1.967	10.54	.
45	399	3.234	11.69	+.009	63	947	1.808	10.54	.
46	467	3.468	10.81	.	64	"	1.814	10.58	.
47	"	3.480	10.73	.	65	948	1.482	10.60	.
48	"	3.495	10.69	.	66	"	1.488	10.65	.
49	523	3.406	11.38	-.014	67	949	2.173	10.68	.
50	"	3.423	11.20	-.017	68	"	2.180	10.55	.
51	"	3.431	11.04	-.026	69	"	3.173	11.20	*.025
52	"	3.440	10.98	-.028	70	"	3.181	11.23	-.021
53	710	3.338	12.03	-.034	71	"	3.194	11.42	-.033
54	"	3.346	11.86	-.044	72	950	2.867	10.66	.
55	769	3.300	12.22	.	73	"	2.873	10.68	.
56	"	3.312	12.16	.	74	952	3.255	12.14	-.047
57	939	1.258	10.56	.	75	"	3.263	11.98	-.022
58	"	1.263	10.56		76	"	3.289	12.27	-.026